APPROACHING MIDNIGHT:

Y2K AND THE WORLD AS WE HAVE COME TO KNOW IT

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ABSTRACT
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Approaching Midnight presents the history of the year 2000 technology problem (Y2K), exploring how the efforts to respond to the problem forced a broad societal reckoning with the essential role computers had come to play in daily life in the United States by the close of the twentieth century. While Y2K is at core about a technical issue arising from the mid-twentieth century programming decision to truncate dates in order to save on expensive computer memory, this historic account considers the ways in which Y2K ultimately became much more than just a technical problem. Presenting the history of Y2K through an engagement with the remediation work of information technology professionals, the assessments made by congressional committees, the publications from mass media outlets, and the activities of community preparedness groups—this dissertation investigates how different groups made sense of Y2K, and how they perceived and sought to prepare for what this computing crisis might bring. Pushing back on the condescension of hindsight that treats Y2K as little more than a techno-panic, *Approaching Midnight* focuses on the tremendous efforts that went into ensuring that Y2K would not result in calamity, while highlighting the uncertainty that fed into anxious appraisals. This dissertation argues that Y2K revealed society's reliance on complex computer systems, while simultaneously revealing the fragility of those very systems.

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Introduction

"We are headed for the first turn in the road in this information highway, and we forgot to put in a steering wheel," is how the outspoken alarm sounder Peter de Jager characterized the year 2000 computer crisis (Y2K) in June of 1998.[1] By the time he delivered this description, de Jager had already been attempting to raise awareness of the threat posed by Y2K for the better part of a decade, but as he related these comments little more than a year and half remained until the fateful deadline, and there was still a great deal of work that needed to be done.

De Jager summarized the broad outlines of Y2K by highlighting three straightforward points: "the code is broken" referring to the basic technical problem that undergirded the entire crisis; "We have a deadline" drawing attention to the fact that the December 31, 1999 was a fixed deadline that could not simply be pushed back; and "we're not good at delivering on time" a discomforting observation based on a recognition that those who worked in the IT sector had a tendency to miss deadlines.[2] Despite the foreboding tenor of his own comments, de Jager lamented "the hype and exaggeration" with which Y2K was largely being treated, pointing to a *Newsweek* cover story that had featured "a large computer falling down upon the heads of running, screaming citizens," which in de Jager's estimation looked "more like an ad for Godzilla than anything else."[3] Nevertheless, beyond "the hype and exaggeration" and beyond the tripartite structure of the problem, de Jager described himself as "determinedly optimistic," emphasizing "We have both the ability and the capability – we even have the resources

[1] Arnaud de Borchgrave and Bradley D. Belt (co-chairs). *The Y2K Crisis: A Global Ticking Time Bomb?* Washington, D.C. June 2, 1998. *The Center for Strategic and International Studies.*
[2] Ibid.
[3] Ibid. The issue of *Newsweek* to which de Jager is referring is the June 2, 1997 issue of the magazine.

necessary to fix this problem," though he warned that what was still lacking was "the management will and courage to face this problem square in the eye and deal with it."[4]

These comments had been delivered by de Jager at a conference organized by the Center for Strategic and International Studies (CSIS), with the fairly ominous title of "The Y2K Crisis: A Global Ticking Time Bomb?" And while there is an old adage, stating that any headline that ends with a question mark can be answered with a simple "no," those assembled for that CSIS event made it clear that while they certainly hoped the titular question would be answered with a "no," as of June 2, 1998, most felt that the most definitive answer they could give was some form of "let's hope not." The conference brought together several of the most prominent voices in and around Y2K to share their outlooks and opinions on the state of the problem and what to expect, it was a gathering of people who could point to their technical expertise, their financial acumen, or their powerful positions as proof of their authority. Hardly a gathering of sackcloth clad prophets of doom, or paranoid survivalists in surplus army fatigues, speakers and discussants at the event, included (among others): Dr. Edward Yardeni the chief economist of Deutsche Morgan Grenfell, Bruce Webster the Chief Information Officer of the Object Systems Group and the co-founder and co-chair of the Washington D.C. Year 2000 Group, Dr. Howard Rubin a professor in the Computer Science department at Hunter College and CEO of Rubin Systems Inc., and the keynote address at the conference was delivered by Senator Robert Bennett who was the chair of the US Senate's Special Committee on the Year 2000 Technology Problem. And as the perspectives shared over the course of the conference made clear, de Jager was hardly an outlier in forecasting dark computer shaped clouds on the horizon.

[4] Ibid.

With a pinch of gallows humor, Bennett noted that in terms of responding to Y2K related problems "the best way to solve it is to start in 1996," though seeing as it was already too late for that, Bennett suggested "you can at least chip away."[5] For all the information that Bennett ostensibly had available to him as the chair of the Senate's committee devoted to Y2K, Bennett still couched his own assessment in a fair amount of uncertainty, admitting that he did not know "whether this will be a bump in the road…or whether this will, in fact, trigger a major worldwide recession with absolutely devastating economic consequences in some parts of the world" though he treated "a fairly serious bump in the road" as representing "the most optimistic assessment."[6] And given this uncertainty, Bennett framed his own work by saying "We must be Paul Revere" loudly announcing "Y2K is coming" and yet in doing so it was also necessary to "not be Chicken Little" warning everyone "that the sky is falling"—for an attitude of impending doom might very well "turn into a self-fulfilling prophecy that will produce the disaster that we want to do whatever we can to try to avoid."[7] Thus, Bennett put the situation simply "Don't panic, but don't spend a lot of time sleeping either."[8] And while Bennett's analysis could be framed as the assessment of an observer lacking in technical knowhow, those coming from the world of IT (as opposed to the world of politics) sounded like they too were trying to walk the fine line between Paul Revere and Chicken Little. Webster highlighted that "it's complex systems that have gotten us into the current situation," noting the heavily intertwined nature of these complex computer systems, and warned of the potential for "Y2K event storms, chain reactions" that could result in

[5] Ibid.
[6] Ibid.
[7] Ibid.
[8] Ibid.

"multiple overlapping failures."[9] Though many of the speakers described themselves as optimists, it fell to Rubin to deliver the more optimistic assessment, noting "It's impossible to separate technology from business today" and emphasizing that the risk presented was of sufficient scale that companies were working seriously on risk mitigation—though Rubin noted he was seeing "Three Little Pigs" style scenarios playing out wherein a variety of approaches were being taken to prepare for Y2K's wolf.[10]

Opinions at the event were not uniform in terms of their overall assessment or in terms of the predictions that flowed from these assessments, yet if one thing united all of the speakers and discussants it was a clear sense that Y2K was a real problem, requiring real attention, with the potential to cause serious disruptions if left unaddressed. And the work that still needed to be done in the remaining sixteen months was significant, with de Jager observing Y2K was "a problem which no company will solve effortlessly."[11] A level of effort that was only exacerbated by what Webster referred to as "the lack of IT professionals," a point that Rubin accentuated with a commented that, at least for the public sector, "we don't have a labor supply. If we did, you couldn't afford it"—points that undermined the hopeful belief that the problem could be solved by throwing enough money at it.[12] While the conference itself was a testament to the attention that Y2K was garnering, many of the speakers nevertheless lamented the lack of awareness around the problem and the unseriousness with which much of the media was treating the topic. Reflecting on his interactions with powerful people about the problem—including the President and Vice President—Rubin recalled hearing a response of "how can we have a

[9] Ibid.
[10] Ibid.
[11] Ibid.
[12] Ibid.

problem like this in a country where we have Intel and Microsoft?" a question which Rubin claimed was "a direct quote."[13] On a somewhat different note, Bennett framed the press's lack of interest in Y2K as being "because it's not sexy enough," which he followed up by adding "You talk about doomsday. That's pretty sexy," further treating Y2K as something that many in the media still saw as being too far off to worry about.[14] Granted, it was not only the media's reporting that was suspect, on the topic of the reporting coming out from companies and agencies on their level of readiness, Webster mused "a lot of the reporting is done by organizations that have no clue how to assess the state of their IT organization."[15] None of those assembled wanted to make a definitive judgement about what would happen, and though all of them acknowledged that time was short, this was apiece with recognizing that time still remained in which progress could be made.

Much of the focus at the event was, understandably, focused on what would happen as 1999 became 2000, but at least one participant in the conference was already looking beyond the early weeks of 2000, to ask a more fundamental question. As Webster wondered: "what will we learn as a society and a species from all of this?"[16]

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"The Bug Didn't Bite: Computers Pass Their Date With Destiny," was the headline in *The Washington Post* on January 1, 2000;[17] similarly *The New York Times* headline declared "'00 Computer Glitches Are Mostly a No-Show;"[18] and Erie, PA's *Times-News Weekender*

[13] Ibid.
[14] Ibid.
[15] Ibid.
[16] Ibid.
[17] Rajiv Chandrasekaran. "The Bug Didn't Bite: Computers Pass Their Date With Destiny." *The Washington Post.* January 1, 2000. A1, A25.
[18] Steve Lohr. "Computers Prevail in First Hours of '00." *The New York Times.* January 1, 2000. A1, A10.

summed it up humorously: "Humans 1, machines 0."[19] As these headlines attest, it was widely recognized that the year 2000 did not begin with massive computer driven disruptions that knocked out essential infrastructure or caused a deep recession. Planes did not fall out of the sky, nuclear power plants did not meltdown, martial law was not declared, and cities did not descend into violent chaos amidst blackouts. In truth, by the closing months of 1999 most of the actual Y2K experts (including those who had participated in the CSIS conference), had concluded that Bennett's "bump in the road" was the most likely scenario, and most of them had never trafficked in the hyperbolic predictions of doom about planes, power plants, and martial law. Nevertheless, the lack of apocalyptic occurrences as 1999 became 2000 was held up by some not as celebratory evidence that the work had been done, but as proof that it had all been wildly blown out of proportion. And thus, those who had spent much of 1999 trying to reassure a wary public that enough work was being done, started the year 2000 attempting to remind everyone all of the work that had actually been done.

Peter de Jager took to the pages of *The Washington Post* to declare that Y2K was not a "sham" but a "success story," stating clearly "We avoided chaos because programmers and managers around the world did their best to solve this potential problem before it became a reality."[20] With de Jager going on to note the irony of the situation being that the "success" of the remediation efforts was being seized upon by critics as proof "that Y2K was an illusion."[21] And de Jager was hardly alone in finding himself on the defensive in the early weeks of January 2000. Over the course of the computing crisis, Representative Stephen Horn had issued ten Y2K report cards that had fairly harshly graded the status of the government's repair efforts, and his

[19] Kevin Noblet. "Humans 1, Machines 0." *Times-News Weekender.* January 1, 2000. 1A, 4A.
[20] Peter de Jager. "Y2K: No Sham—A Success Story." *The Washington Post.* January 3, 2000. A19.
[21] Ibid.

subcommittee held the honor of having conducted the first Y2K related hearing—and on January 27, 2000 at Congress's final Y2K hearing, titled "Year 2000 Computer Problem: Did the World. Overreact, and What Did We Learn?" Horn responded to the titular "did the world overreact?" with a firm "no." Horn stated it plainly, "We prodded, we questioned, and we hoped for the best, and the best happened."[22] And in terms of the massive expenditure, Horn wondered, "Was that money well spent? Of course it was…This was a massive problem that required a massive solution."[23] Horn was not an outlier at that hearing, Representative Constance Morella, stated "In my mind there is no doubt the problem was real," and went on to note "I think the fact that nothing of disastrous proportions happened does not mean that nothing would have happened."[24] Testifying at that hearing, John Koskinen, who had been chairman of President Clinton's Council on Year 2000 Conversion, acknowledged "There is general agreement that the Y2K transition went more smoothly than any of us would have imagined," but Koskinen hastened to add, "I don't know of a single person working on Y2K who thinks that they did not confront and avoid a major risk of systemic failure…Y2K was a very real threat indeed."[25] And a similar sentiment could be detected in the final report issued by the Senate's Special Committee on the Year 2000 Technology Problem, of which Senator Bennett was the chair, which stated "the level of effort was justified, and the expenditures of the public and private sectors were indeed necessary."[26] Referring back to the "Testimony and available research" the Special Committee

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[22] U.S. Congress. House. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and the Subcommittee on Technology of the Committee on Science. *Year 2000 Computer Problem: Did the World Overreact, and What Did We Learn?,* 106th Cong., 2nd sess., January 27, 2000. 2.
[23] Ibid.
[24] Ibid, 6.
[25] Ibid, 14-15.
[26] U.S. Congress. Senate. Special Committee on the Year 2000 Problem. *Y2K Aftermath—Crisis Averted: Final Committee Report.* 106th Cong., 2nd sess., S. Prt. 106-42. February 29, 2000. 10.

emphasized "that the Y2K threat was real, and that the risks and consequences of inaction were too dire to justify a lesser effort."[27]

Furthermore, even as the headlines had merrily trumpeted the lack of calamitous occurrences, the House and Senate both emphasized that there really had been quite a few bumps in the road. Horn cited several of the glitches that did occur—including some impacting Defense Department satellites, and issues some retailers had encountered—noting that these incidents gave "cause to wonder what might have happened if the work had not been completed."[28] On a similar note the Special Committee's final report pointed to "hundreds of computer problems" but noted that "most have been quickly corrected and none have caused serious disruptions."[29] Though the Special Committee added a further wrinkle to the view that even this represented a smooth transition, by highlighting that as "there is no incentive for corporations to openly report problems, the full extent of Y2K's impact may never really be known."[30] The existence of a smattering of glitches did not go completely ignored by the media, as *The New York Times* put it on January 4, "Year 2000 computer glitches began appearing as much of the world headed back to work…but they remained scattered, and for the most part, trivial," and while they too noted "confidential reports" indicating many more incidents nearly all of which were "fixed within hours of their discovery," these reports still paled in comparison to some of the apocalyptic scenarios people had been led to expect.[31] The idea that much of what actually happened was

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[27] Ibid.
[28] U.S. Congress. House. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and the Subcommittee on Technology of the Committee on Science. *Year 2000 Computer Problem: Did the World Overreact, and What Did We Learn?*. 2.
[29] U.S. Congress. Senate. Special Committee on the Year 2000 Problem. *Y2K Aftermath—Crisis Averted: Final Committee Report.* 9.
[30] Ibid.
[31] Barnaby Feder. "Few Year 2000 Glitches Are Reported on First Working Day." *The New York Times.* January 4, 2000. C1.

going unseen and unacknowledged by the broader public was evident in much of the tech press. *Computer* quoted "a veteran software developer" as saying "there were a lot of Y2K bugs, and a lot of effort will be expended fixing them over the next few months."[32] And *Computerworld* cited the director of an information technology research organization as observing that "With everyone carrying the impression that things went so well, no company will want to look like it was the only one that fell down."[33] And the sense that most people were moving on, acting as though Y2K had all been something of a hoax, gave rise to a certain amount of resentment on the part of some of those who had worked to ensure that Y2K did not result in calamity, as Frank Hayes put it in his column in *Computerworld*: "IT people around the world, and the people who use IT to get the job done, did their jobs so well—nothing went wrong anywhere. And as a result, these clowns will give you credit for exactly…nothing."[34]

In the middle of 1998, Webster had wondered: "what will we learn as a society and a species from all of this?" And in the early weeks of the year 2000, Representative Constance Morella was similarly asking, "Will Y2K inspire a conscious effort for greater long-term planning and more reliable and secure technology, or will it just prolong the shortsighted thinking that made Y2K so costly?"[35] Clearly, computer dependent societies had managed this "first turn in the road in this information highway," but when asked to reflect on what had been taken away from Y2K, Peter de Jager acknowledged "there are lots of lessons available to us," though he followed up this recognition of available lessons by saying "I don't think we've

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[32] Anne Lear. "Y2K Rollover: Few Problems, Many Questions." *Computer* 33, No. 2 (February 2000): 22.
[33] Computerworld Staff. "What Did Go Wrong: A Global Roundup of Y2K Glitches." *Computerworld* 34, Iss. 2 (January 10, 2000): 19.
[34] Franke Hayes. "Frank Hayes/Frankly Speaking: Feeling Cheated?" *Computerworld* 34, Iss. 2 (January 10, 2000): 82.
[35] U.S. Congress. House. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and the Subcommittee on Technology of the Committee on Science. *Year 2000 Computer Problem: Did the World Overreact, and What Did We Learn?*. 7.

learned anything from this."[36] De Jager's point was made specifically in regards to what the IT sector had learned from Y2K, but considering the speed with which Y2K moved from a major concern to a topic of ignominy, and the derision with which the event is largely recalled today—it seems tempting to respond to Webster and Morella's questions, with de Jager's woebegone conclusion "I don't think we've learned anything from this."

This dissertation examines the history of Y2K—the way the crisis was seen by a variety of parties at the time—in order to explore what should be learned from Y2K, and in the perhaps naïve hope that this work may in some small way contribute to Y2K being an event from which we truly can learn.

Three Problems for the Price of 00

Y2K is the story of an economic problem that became a technical problem which in turn became a social problem. To make sense of the year 2000 computer crisis (better known as Y2K), it is important to recognize that Y2K functions as a shorthand that simultaneously represents two distinct yet intertwined events. On the most basic level, Y2K came to be a way to define a fairly straightforward technical problem with its roots in the middle of the twentieth century's history of computing; while on the more complicated level, Y2K came to be a descriptor for all of the ways that the broader society was trying to make sense of the risks they were now facing as a result of that fairly banal technical problem.

[36] Anonymous. "Have We learned Nothing From the Y2K Episode?" *Computerworld* 34, Iss. 2 (January 10, 2000): 19.

The origins of Y2K are not a tale of a nefarious group laughing maniacally as they set in motion plans that would bring society to its knees decades later, rather Y2K's origins are related to the basic realities of computing's early decades. Put simply: in the days when computers still relied on punch cards, data storage was extremely limited and quite expensive, thus—as Capers Jones described it in his book *The Year 2000 Software Problem*: "any method that could save storage was readily adopted."[37] The ability to represent a date using six characters instead of eight was a decision that saved storage, and thus also saved money. What this truncating meant was that, for example, August 14, 1956 would not be represented as 08141956 but as 081456. This choice, to truncate dates, was one not made out of maliciousness but out of pressure from managers to save money, and out of a sensible move on the part of early programmers to find an easy technical solution that worked. And, to be clear, truncating dates worked. The computer systems that relied on dates to make calculations were able to perform these calculations quite well using the assumption that the omitted century digits were 1 and 9. Of course, the programmers who were making the decision to truncate dates were able to read a calendar, and they knew that eventually the century digits would switch over from 1 and 9 to 2 and 0, however "Since no one in the 1950s or 1960s had any idea how long software would last, it seemed natural to store dates in two-digit form."[38] This comment from Jones is not meant to suggest that computer professionals did not know what they were doing, but rather stands as a reminder that in the 1950s and 1960s such professionals were working in a nascent field with technologies that were themselves quite new. At the point the decision to truncate dates was made, the longevity of code was still very much an open question. Thus, even as some in the computing community—

[37] Capers Jones. *The Year 2000 Software Problem: Quantifying the Costs and Assessing the Consequences* (New York: ACM Press, 1998). 21.
[38] Ibid.

namely Robert Bemer—tried to alert others to the potential for truncating to eventually result in a problem, it was still possible to believe that the problem would inevitably be fixed once newer code replaced the older code.[39] Alas, as new code was built atop old code—with that new code needing to successfully interact with the old code—this earlier decision to truncate dates was reinscribed and reinforced across computer systems for decades, even once the initial financial need to save a little bit of space was no longer quite as significant.

For a better sense of why this might matter, consider one of the sorts of examples that was frequently used to illustrate how computers made such date related calculations, namely: social security. In order to determine eligibility for benefits, the Social Security Administration would need to determine if a given person was 65 years of age or older. Thus, for example, a computer could take someone born on January 1, 1934 (010134) and compare that birthdate to the current date, let us imagine that was, January 1, 1999 (010199) by subtracting 34 from 99 and get the result of 65. Simple enough. However, for this calculation to work properly the computer executing it needs to assume that the century digits are the same across the calculation. So, what happens when that person born on January 1, 1934 has this same calculation made on January 1, 2000? Well in that case, 34 is subtracted from 00 and instead of the result stating that the person is 66 years old, the result is that the person is -34 years old—which could result not only in the system automatically cutting off benefits but could also raise complex philosophical questions about how someone could be -34 years old. And while there are always some who are eager to find ways to make themselves younger, this method was hardly a solution.

[39] R.W. Bemer. "What's the Date?" *Honeywell Computer Journal* 5, No. 4 (1971): 205-208; R.W. Bemer. "Time and the computer." *Interface Age Magazine* 4, No.2, (February 1979): 74-79.

The problem was that many different sorts of computer systems relied on dates for performing a range of different functions, and that as these computers encountered date related problems these could have all manner of deleterious impacts on the system. In its initial report, the Special Committee avoided technical language to instead make the dangers clear to a lay-readership, by noting that these problems "in business systems" might "cause an enterprise to lose partial or complete control of critical processes" including those involved in managing "finances, making or receiving payments and tracking inventory, orders, production, or deliveries."[40] Meanwhile over in the public sector "government organizations may be severely hindered in performing basic functions" with these including the payment of benefits, the maintenance of defense readiness, the ability to respond to emergencies, and much else besides.[41] Indeed, the Special Committee's report provided a somber walk through of the ways that these Y2K related problems could impact everything from utilities to health care to telecommunications to transportation to financial institutions to government to general business. Y2K had the potential to cause problems both in mainframe systems and with embedded systems, and as the Special Committee's report made clear, by the closing years of the twentieth century these systems were everywhere. And even if a particular individual did not have a personal computer at home, or use one at work, unless they were living totally off the grid, they were still reliant on banks, utilities, telecommunications companies, and grocery stores that had become heavily dependent on computer systems for their basic daily functioning.

Considering the existence of this problem, clearly it would be necessary to fix it. And it was in the effort to fix Y2K, that the problem became even more galling. For even if the basic

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[40] U.S. Congress. Senate. Special Committee on the Year 2000 Problem. *Investigating the Impact of the Year 2000 Problem.* 106th Cong., 2nd Sess., S. Prt. 106-10. February 24, 1999. 9.
[41] Ibid.

technical problem was at root a relatively simple one, what made it so challenging was the scale of how many systems would need to be checked, fixed, and then tested—and the limited timeframe in which all of that work needed to be completed. As Weibe Bijker, Anique Hommels, and Jessica Mesman have discussed, "scientific and technological developments do not only support and strengthen societies; they also make societies vulnerable at the same time," and they characterize "such vulnerability" as "an inevitable characteristic of today's technological cultures."[42] Similarly, as Ulrich Beck has theorized in his comments on the emergence of "the risk society," where there emerges "the *political potential of catastrophes.* Averting and managing these can include a *reorganization of power and authority*"—and the attempt to avert and manage the catastrophic "potential" of Y2K demonstrates how increasing power and authority came to be vested in computer systems and into the hands of those who understood how such systems work.[43] The Special Committee acknowledged the hope that some "quick fix" would be discovered, but recognized "there are over 500 programming languages in use" and it would be hard to imagine a "quick fix" that would work across all of them, and locating "all the dates and date processing in an estimated 36,000,000 programs is an enormous task difficult to automate."[44] As the participants from the IT world in the previously mentioned CSIS conference made clear, it was not that there weren't legions of IT professionals hard at work on fixing Y2K related problems, but that they had a great deal of work to do, and unfortunately most of them had gotten to work on the problem later rather than sooner. The Y2K problem had been able to spread thanks largely to the belief amongst programmers that someone else would come along

[42] Anique Hommels, Jessica Mesman, and Wiebe E. Bijker (eds). *Vulnerability in Technological Cultures: New Directions in Research Governance* (Cambridge: The MIT Press, 2014). 3.
[43] Ulrich Beck. *Risk Society: Towards a New Modernity* (Los Angeles: Sage, 1986). 24.
[44] U.S. Congress. Senate. Special Committee on the Year 2000 Problem. *Investigating the Impact of the Year 2000 Problem.* 11.

and fix it before time ran out, and by 1998 Jones was warning "There are not enough hours and weeks left between now and the year 2000 to continue to work on the problem for only one eight-hour shift out of every 24 hours."[45] In regards to what needed to be done to effectively handle Y2K, Bruce Webster was almost comically straightforward: "Modify the programs or devices to work properly, or replace them with ones that do. That's it. It's not rocket science; it's barely computer science."[46]

These are the economic and technical aspects of Y2K. The economic problem is the matter of the high-cost of computer memory, a problem which found its solution in the decision to truncate dates (a solution which, it must be noted, worked). The solution to that economic problem in turn gave rise to the technical problem: that when the century rollover occurred, many computer systems would encounter problems if not fixed, a problem that was allowed to metastasize as it was overlooked for years. Therefore, that basic technical problem (the truncated dates), grew in scale and scope as the effected systems spread throughout societies. Limited memory had not just represented a technical constraint, it had simultaneously been an economic constraint, and the decision to truncate dates had flowed as much (if not more) from economic pressures as from technical pressures. Recognition of this fact helps to shift some of the onus from the programmers themselves to highlight that they were responding to pressure and demands from managers who may have been more interested in saving money in the moment than with a possible technical issue that might crop up decades later. In the 1990s there was a great deal of attention to Y2K that focused on the cost of the fixes, but the problem had its origins in an effort to cut costs—suggesting that perhaps one of the larger economic lessons to

[45] Jones, 21.
[46] Bruce Webster. *The Y2K Survival Guide: Getting to, Getting Through, and Getting Past the Year 2000 Problem* (Upper Saddle River: Prentice-Hall PTR, 1999). 20.

take from Y2K is that technical decisions that might save money in the present, have the potential to be quite expensive in the future. Nevertheless, the core of the technical problem was the Y2K bug itself, a programming issue which—as Webster and any number of other IT professionals noted—simply needed to be fixed. And while that work was not necessarily the most glamorous or exciting, it was work that needed to be done in order to keep the more glamorous and exciting sides of society functioning. And it is this, which brings us to the way that Y2K ultimately became a social problem.

Y2K was everywhere. It was on the cover of *Newsweek* and *Time Magazine*, it was on the nightly news, members of Congress were talking about it, it was on the bestseller list, *The Simpsons* was joking about it, Superman was fighting it—at least in the United States, Y2K became part of the culture of the closing years of the 1990s. Nevertheless, Y2K was everywhere, because the Y2K technical problem was everywhere, a point which was driven home by the popular press coverage, the Congressional commentary, and even by many of the pop culture references to it. Yes, at base Y2K was a somewhat banal technical problem, but it was one that pointed to a more profound problem about the power the computer had in society and in the world. After all, the history of computing (and the history of technology more generally) has plenty of incidents of technical snafus that cause headaches for those within the technical community, but which fail to solicit even a fraction of the attention garnered by Y2K. Yet as many of those commenting on Y2K in the midst of the crisis noted, Y2K came along at the perfect time: the moment not only of the computer's ascendancy but of the computer's triumph, in order to warn people of the fact that in embracing the computing's goods they were now also responsible for living with computing's risks.

This was a point made plainly by the Special Committee in the introduction to its first report on Y2K, in which they noted "At the heart of the problem lies a serious disconnect between those who use technology and those who create it."[47] And as the Special Committee's own hearings, and the rest of the report made clear, by the closing years of the twentieth-century "those who use technology" (with "technology" here functioning as a stand-in specifically for computer technology), described pretty much everyone, and in the juxtaposition between the creators of technology and the users of technology, the members of the Special Committee were grouped in with the latter category. Of course, Y2K was not the first computing issue to be dubbed a crisis, as Janet Abbate, Nathan Ensmenger, and Donald MacKenzie have all discussed in regards to the "software crisis" of the 1960s.[48] And while that "software crisis" was an important moment in the professionalization, and gendering, of the computing profession it never sparked the same level of public panic as was created by Y2K. Case in point, the "software crisis" of the 1960s did not result in the formation of a Senate Special Committee, but in the run up to Y2K the Special Committee that had been formed to address that crisis was pointing specifically to "leaders of corporations and countries" who were "struggling to understand the Y2K problem," the Special Committee argued that such people were "receiving a crash course in the fragile mechanics of information technology."[49] But it was not only the "leaders of corporations and countries" who were getting this "crash course," it was also one that all of those "who use technology" were being treated to. Yes, at the most basic level, blame for the problem

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[47] U.S. Congress. Senate. Special Committee on the Year 2000 Problem. *Investigating the Impact of the Year 2000 Problem*. 7-8.
[48] Janet Abbate. *Recoding Gender: Women's Changing Participation in Computing* (Cambridge: The MIT Press, 2012); Nathan Ensmenger. *The Computer Boys Take Over: Computers, Programmers, and the Politics of Technical Expertise* (Cambridge: The MIT Press, 2010); Donald MacKenzie. *Mechanizing Proof: Computing, Risk, and Trust.* (Cambridge: The MIT Press, 2001).
[49] U.S. Congress. Senate. Special Committee on the Year 2000 Problem. *Investigating the Impact of the Year 2000 Problem*. 8.

could be laid at the feet of "nerddom" for making this programming decision in decades past, yet in its cover story on Y2K, *Newsweek* also clearly linked the problem to "our wired-up-the-wazoo civilization."[50] Or, as *Time Magazine* put it in its own Y2K cover story, "the Y2K bug is something akin to the original sin of technological society, a mortal flaw bred in the very bones of the modern world."[51] While the Special Committee noted that "Technology has provided the U.S. with many advantages, but it also creates many new vulnerabilities,"[52] this claim reads not as angry finger-wagging at programmers for lacking foresight, but as a warning to one and all that computerization carried risks. Indeed, many of the discussions surrounding Y2K, made use of comparisons to natural hazards like blizzards, hurricanes, and earthquakes—making it clear that just as people had become accustomed to preparing for disruptions caused by natural hazards, they also now needed to pay greater attention to the ways that their lives could be disrupted by technological hazards as well.

Y2K may have owed its origins to an economic problem, and at core it may have been fundamentally a technological problem, and yet in the recognition that this technological problem threatened daily life for all who had—whether they realized it or not—come to depend on the normal functioning of computer systems, meant that Y2K represented a social problem as well.

Y2K's Place in History

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[50] Steven Levy and Katie Hafner. "The Day the World Shuts Down." *Newsweek* 129, Iss. 22 (June 2, 1997): 52-59. 54.
[51] Richard Lacayo. "The End of the World As We Know IT?" *Time Magazine* 153, Iss. 2 (January 18, 1999): 60-70. 68.
[52] U.S. Congress. Senate. Special Committee on the Year 2000 Problem. *Investigating the Impact of the Year 2000 Problem*. 13.

Considering the amount of attention that Y2K received in the final years of the twentieth century, it is in some ways rather curious that Y2K has not received more scholarly attention from historians of computing, historians of technology, and from those working in the various interdisciplinary spaces that are concerned with computing. On a certain level, this may be attributable to the fact that Y2K took place in the recent enough past as to make some historians feel as though it is still "too soon" to treat Y2K as a historic event. And, in fairness, the work on this dissertation began at a point when the fateful transition to the year 2000 was less than 20 years in the past. Nevertheless, there is ample scholarship in the history of computing (and in the STS field), that engages with various events and developments that are even more recent than Y2K. Indeed, within the history of computing, some of the comprehensive histories written by leading historians within the field consider developments that encompass the smartphone and web 2.0 (post-Y2K developments), and recent edited collections that capture the state of contemporary research in the history of computing also feature numerous chapters investigating occurrences that happened post-Y2K.[53]

Nevertheless, even as there are some signs that Y2K is of growing interest amongst those interested in the history of computing, for the most part the event is either overlooked or treated as something of a footnote to be acknowledged, only to be moved on from in service of a larger point or argument. Sean Johnston places Y2K within the computing industry's history of "unrealistically optimistic forecasts and unanticipated failures," referring to it as a "panic, fortunately incorrect," while placing it in a context of software products requiring "permanent

[53] Janet Abbate and Stephanie Dick. *Abstractions and Embodiments: New Histories of Computing and Society* (Baltimore: Johns Hopkins University Press, 2022); Martin Campbell-Kelly, William Aspray, Nathan Ensmenger, and Jeffrey Yost. *Computer: A History of the Information Machine* (New York: Westview Press, 2014); Paul Ceruzzi. *A History of Modern Computing* (Cambridge: The MIT Press, 2003); Thomas Haigh and Paul Ceruzzi. *A New History of Modern Computing* (Cambridge: The MIT Press, 2021); Thomas Mullaney, Benjamin Peters, Mar Hicks, Kavita Philip. *Your Computer Is On Fire* (Cambridge: The MIT Press, 2021).

vigilance."[54] Amidst reflections on the importance of computer code, the edited volume *"You Are Not Expected to Understand This,"* Y2K receives two passing mentions.[55] Pointing to the resiliency and longevity of COBOL, Claire Evans notes that "COBOL survived the Y2K crisis" as well as its creator, before noting that COBOL survives still.[56] And in that same volume Meredith Broussard describes how Y2K meant "Changing over to the year 2000 was going to screw up an awful lot of code," as an explanatory aside to noting that after the legalization of same-sex marriage in the United States "The database redesign process was informally called Y2gay."[57] In another recent edited volume, *Your Computer is on Fire*, the only reference to Y2K is Kavita Philip's comment on how the demand for skilled labor during Y2K "brought Indian data-entry workers to the global stage."[58] And Y2K's role in the growth of the Indian IT sector has been further explored in work by Dinesh Sharma.[59] Commenting on Y2K, Nathan Ensmenger has noted that for "the average citizen, the fuss that the computer people made about Y2K was just one of several apocalyptic scenarios that swirled around the turn of the millennium, all of which seem, in retrospect, self-evidently unfounded."[60] And in placing Y2K within a broader history of the IT sector's development, Ensmenger argued that "the Y2K problem was just another in a long series of software crises," with its significance being what it

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[54] Sean Johnston. *Techno-Fixers: Origins and Implications of Technological Faith* (Montreal: McGill-Queen's University Press, 2020). 186.
[55] Torie Bosch (ed). *"You Are Not Expected to Understand This." How 26 Lines of Code Changed the World.* (Princeton: Princeton University Press, 2022).
[56] Claire L. Evans. "Jean Sammet and the Code That Runs the World," in *"You Are Not Expected to Understand This." How 26 Lines of Code Changed the World,* ed. Torie Bosch (Princeton: Princeton University Press, 2022): 25-30. 30.
[57] Meredith Broussard. "Encoding Gender," in *"You Are Not Expected to Understand This." How 26 Lines of Code Changed the World*, ed. Torie Bosch (Princeton: Princeton University Press, 2022): 162-168. 164.
[58] Kavita Philip. "The Internet Will Be Decolonized," in *Your Computer Is On Fire*, eds. Thomas Mullaney, Benjamin Peters, Mar Hicks, Kavita Philip. (Cambridge: The MIT Press, 2021): 91-115. 104.
[59] Dinesh C. Sharma. *The Outsourcer: The Story of India's IT Revolution* (Cambridge: The MIT Press, 2015).
[60] Nathan Ensmenger. *The Computer Boys Take Over: Computers, Programmers, and the Politics of Technical Expertise* (Cambridge: The MIT Press, 2010). 224.

showed about "the problem of software maintenance."[61] In the second edition of his comprehensive *A History of Modern Computing*, Paul Ceruzzi makes two references to Y2K: the first of which places Y2K in the history of COBOL while noting the lack of documentation that often took place, while his second reference connects Y2K to the "longevity of 1401 software."[62] Though, the next edition of Ceruzzi's book, co-written with Thomas Haigh, does not even feature these passing references to Y2K.

While the aforementioned glimpses of Y2K attest to the fact that Y2K is not completely overlooked in contemporary scholarship within the history of computing, and associated fields, there are clearly some efforts to argue that Y2K is worthy of more attention.[63] Writing in the *IEEE Annals of the History of Computing*, Dylan Mulvin's exploration of 1999's Y2K Act provides an essential intervention in the ways that perception of the risks of Y2K (and the ways Y2K related failures could result in expensive litigation) resulted in the passage of actual legislation.[64] Mulvin's insights into the way that the Y2K Act reveals "the emerging importance of Silicon Valley as a coherent bloc of political actors and the many ways that state, corporate, and civil society institutions thought bout and mitigated their reliance on legacy code" demonstrates the way that Y2K revealed an IT sector becoming more aware of its power even as "political actors" were being forced to consider how their own power was built upon "legacy code" they did not personally understand.[65] And with Cait McKinney, Mulvin has discussed how the history of Y2K is not isolated from, but bound up with, the other challenges of the 1990s—

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[61] Ibid.
[62] Paul Ceruzzi. *A History of Modern Computing* (Cambridge: The MIT Press, 2003). 93, 151.
[63] Zachary Loeb. "Waiting for Midnight: Risk Perception and the Millennium Bug," in *Abstractions and Embodiments: New Histories of Computing and Society*, eds. Janet Abbate and Stephanie Dick (Baltimore: Johns Hopkins University Press, 2022): 23-39.
[64] Dylan Mulvin. "Distributing Liability: The Legal and Political Battles of Y2K." *IEEE Annals of the History of Computing* 42, Iss. 3 (July-September, 2020): 26-37.
[65] Ibid, 35.

notably how the "viral" framing around computer bugs and problems is connected with the period's concern over the HIV/AIDS crisis.[66] Looking at the Y2K crisis alongside the AIDS crisis, McKinney and Mulvin detail how "discourse of stigma, vitality, and vulnerability connected the two crises," thus placing Y2K within the broader context of risks in the 1990s and the way discussions of these risks echoed one another.[67] Approaching Y2K from a position particularly attuned to government responses, Kevin Quigley has compared actions taken by the US government and the UK government in preparing for Y2K—considering the role played by various sorts of pressure (market, public) in generating various actions.[68] While noting that "Y2K may seem rather mundane in a post-9/11 environment," Quigley emphasized that Y2K "is an excellent springboard into research on infrastructure protection," and convincingly treats the successes around Y2K as events not to be shrugged at but to be learned from for the future.[69] This dissertation aims to build upon the existing scholarship on Y2K, engaging with the way Y2K was seen as a major issue requiring government responses, but foregrounding how this computer related crisis presented itself to a variety of societal groups.

Though Y2K has been of seemingly sparse interest to historians in the first decades of the twenty-first century, in the midst of the Y2K crisis at least some scholars seemed quite aware that what they were witnessing was of some historic import. Writing in *The Washington Post* at the start of 1999, Ceruzzi had noted that Y2K showed "we need to pay attention not just to those who tell us what our wondrous inventions can do but to the ones who have an inkling of what

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[66] Cait McKinney and Dylan Mulvin. "Bugs: Rethinking the History of Computing." *Communication, Culture & Critique* 12, No. 4 (2019): 476-498.
[67] Ibid, 493.
[68] Kevin F. Quigley. *Responding to Crises in the Modern Infrastructure: Policy Lessons from Y2K* (London: Palgrave-MacMillan, 2008).
[69] Ibid, 166.

they can't do."[70] Drawing on his knowledge, and authority, as a historian of computing in that piece, Ceruzzi had placed Y2K within a broader sequence of events, linking Y2K's spread to the triumph of IBM's System/360 and encouraging readers to remember that "Reusing and adapting what has already been done is common in modern technology."[71] And Ceruzzi framed "the Y2K phenomenon" as one that was going "to teach us a something of the nature of technology," namely that "Technology is about making things that just barely work."[72] Ceruzzi's comments about the fragility of technology, were echoed in a "new afterword" that appeared in Charles Perrow's *Normal Accidents*, which treated Y2K as exactly the sort of titular "normal" accident produced by the coupling of complex technological systems.[73] As Perrow saw it, "Y2K could be the quintessential Normal Accident of both the twentieth and twenty-first centuries,"[74] as it would "disclose the high degree of interdependency of our chip societies,"[75] and would "permit a kind of *test* of the robustness of societies."[76] In the edited volume *The Year 2000: Essays on the End*, Sandra Schnazer provided a technically grounded account of the computer crisis so as to differentiate it from other chapters in that volume focused on religiously inflected apocalypticism, while treating Y2K as a reminder that "computer systems…often do not perform as designed, but the actual performance is rarely an improvement."[77] Commenting on Y2K in the pages of the Society for the History of Technology's official journal, *Technology and Culture*, Paul Edwards noted that the pervasiveness of the Y2K problem demonstrated the ways in which

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[70] Paul Ceruzzi. "Y2K: Old Hat in New Technology." *The Washington Post*. January 11, 1999. A19.
[71] Ibid.
[72] Ibid.
[73] Charles Perrow. *Normal Accidents: Living with High-Risk Technologies* (Princeton: Princeton University Press, 1999).
[74] Ibid, 390.
[75] Ibid, 392
[76] Ibid, 393.
[77] Sandra Schnazer "The Impending Computer Crisis of the Year 2000," in *The Year 2000: Essays on the End*, eds. Charles B. Strozier and Michael Flynn (New York: New York University Press, 1997): 263-272. 272.

"Computers have become, as it were, the infrastructure of our infrastructures."[78] And, in looking back at Y2K in the still early years of the twenty-first century, Donald MacKenzie pointed to "The Y2K episode" as "the first real upsurge of public concern about computerized risk," though to this he added the somber note that "because of the very limited actual problems that manifested themselves," Y2K could "lead to complacency and thus to greater future danger in safety-critical and security-critical computing."[79]

For scholars interested in, and working on, the history of computing, it seems that the topic of Y2K must have been almost inescapable for the latter half of the 1990s. Especially as Y2K was being discussed not only in the halls at academic conferences but in Congress and on the front page of newspapers. Granted, as the coverage of Y2K from the 1990s makes clear, the academics who were most commonly being quoted in the media and summoned to testify before Congress tended to be professors in computer science departments, not professors in history departments. It may be that some of the hesitancy to more fully engage with Y2K was a result of it (for a time) being perceived as still too recent to be treated as history, it may have been that the public excitement and embrace of the Internet provided a fresher topic of inquiry, it may have been that the events of September 11 and the beginning of the War on Terror provided new technical risks and disasters to focus on, and—frankly—it may be that many historians of technology and computing shared the prevailing public sentiment that Y2K was an amusing techno-panic that was unworthy of serious consideration. Nevertheless, the comments related to Y2K made by scholars in the 1990s, and the scattered mentions to it that have appeared in the

[78] Paul N. Edwards. "Y2K: Millennial Reflections on Computers as Infrastructure." *History and Technology* 15 (1998): 7-29. 11.
[79] Donald MacKenzie. *Mechanizing Proof: Computing, Risk, and Trust* (Cambridge: The MIT Press, 2001). 302.

decades since, all attest to a sense that there is something in Y2K that deserves greater attention—which is part of what has inspired this dissertation.

While this dissertation aims to contribute to several fields—the history of technology, the history of computing, media studies, STS, and the history of disasters—its largest intervention is undoubtedly within the history of computing. And its core contribution is to argue that Y2K deserves to be taken seriously within the history of computing—as an example of a problem with its roots in the early history of computing, as an occasion to further investigate the development of the IT profession, and as an essential moment in societies' grappling with their reliance on computer technology. With its roots in the mid-twentieth century history of computing, this dissertation is built upon the foundation constructed by works that have analyzed the growth and development of computing to bring it to the point at which the decision to truncate dates took place.[80] Here Y2K is not a history of the development of a large technological system, so much

[80] See: William Aspray. *John von Neumann and the Origins of Modern Computing* (Cambridge: The MIT Press, 1990); Charles Bashe, Lyle Johnson, John Palmer, Emerson Pugh. *IBM's Early Computers* (Cambridge: The MIT Press, 1985); James R. Beniger. *The Control Revolution: Technological and Economic Origins of the Information Society* (Cambridge: Harvard University Press, 1986); Martin Campbell-Kelly. *From Airline Reservations to Sonic the Hedgehog: A History of the Software Industry* (Cambridge: The MIT Press, 2003); Manuel Castells. *The Rise of the Network Society (Second Edition)* (Oxford: Wiley-Blackwell, 2010); John Hendry. *Innovating for Failure: Government Policy and the Early British Computer Industry* (Cambridge: The MIT Press, 1990); Hunter Heyck. *Age of System: Understanding the Development of Modern Social Science* (Baltimore: Johns Hopkins University Press, 2015); Tracy Kidder. *The Soul of a New Machine* (New York: Black Bay Books, 1981); Rob Kitchin and Martin Dodge. *Code/Space: Software and Everyday Life* (Cambridge: The MIT Press, 2011); Jennifer Light. *From Warfare to Welfare: Defense Intellectuals and Urban Problems in Cold War America* (Baltimore: Johns Hopkins University Press, 2003); Donald MacKenzie. *Mechanizing Proof: Computing, Risk, and Trust* (Cambridge: The MIT Press, 2001); Michael S. Mahoney. "The Histories of Computing(s)", *Interdisciplinary Science Reviews.* Vol. 30, No. 2 (2005): 119-135; Rene Moreau. *The Computer Comes of Age* (Cambridge: The MIT Press, 1985); Arthur Norberg and Judy O'Neill. *Transforming Computer Technology: Information Processing for the Pentagon, 1962-1986* (Baltimore: Johns Hopkins University Press, 1996); Emerson Pugh. *Building IBM* (Cambridge: The MIT Press, 1995); Mark Priestley. *A Science of Operations: Machines, Logic, and the Invention of Programming* (London: Springer Books, 2011); Joy Lisi Rankin. *A People's History of Computing in the United States* (Cambridge: Harvard University Press, 2018); Kent Redmond and Thomas Smith. *From Whirlwind to MITRE* (Cambridge: The MIT Press, 2000); Raul Rojas and Ulf Hashagen. *The First Computers* (Cambridge: The MIT Press, 2000); Alex Roland and Philip Shiman. *Strategic Computing* (Cambridge: The MIT Press, 2002); Fred Turner. *From Cyberculture to Counterculture: Stewart Brand, the Whole Earth Network and the Rise of Digital Utopianism* (Chicago: The University of Chicago Press, 2006); Noah Waldrip-Fruin. *Expressive Programming: Digital Fictions, Computer Games, and Software Studies* (Cambridge: The MIT Press, 2009); M. Mitchell Waldrop.

as an account of the risks that emerge once that technological system has built up a sizable amount of technological momentum.[81] Wendy Hui Kyong Chun's work on the long life of code, and the way old code gets extended as newer code is built on top of it, provides an important insight into the way that the Y2K problem was allowed to develop—as it is a clear case of older code being extended rather than replaced.[82] Thus it is a reminder that David Edgerton's provocation not to lose sight of the persistence of older technologies, very much pertains to old code surviving in newer hardware.[83] Scholars including Janet Abbate, Nathan Ensmenger, Mar Hicks, Charlton McIlwain and Jeffrey Yost have all done essential work on the growth and development of the IT sector—tracking the competing economic and political pressures that influenced the IT field's shape, while drawing attention to questions of expertise and professionalism—and this dissertation builds upon and extends that analysis into a decade in which the IT sector was no longer nascent but in which it was still asserting its identity.[84] At risk of making a terrible joke, in terms of scholarship on the history of the IT profession, Y2K moves

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The Dream Machine: J.C.R. Licklider and the Revolution that Made Computing Personal (New York: Penguin Books, 2001); Maurice Wilkes. *Memoirs of a Computer Pioneer* (Cambridge: The MIT Press, 1985); John Vardalas. *The Computer Revolution in Canada: Building National Technological Competence, 1945-1980* (Cambridge: The MIT Press, 2001); Shoshana Zuboff. *In the Age of the Smart Machine: The Future of Work and Power* (New York: Basic Books, 1988).

[81] See: Thomas Hughes. "The Evolution of Large Technological Systems." In Wiebe E. Bijker, Thomas Hughes, and Trevor Pinch (eds). *The Social Construction of Technological Systems* (Cambridge: The MIT Press, 2012): 45-76; Thomas Hughes. "Technological Momentum." In Merritt Roe Smith and Leo Marx (eds.). *Does Technology Drive History?* (Cambridge: The MIT Press, 1994): 101-113.

[82] Wendy Hui Kyong Chun. *Programmed Visions: Software and Memory* (Cambridge: MIT Press, 2011).

[83] David Edgerton. *The Shock of the Old: Technology and Global History Since 1900* (Oxford: Oxford University Press, 2007).

[84] See: Janet Abbate. *Recoding Gender: Women's Changing Participation in Computing* (Cambridge: The MIT Press, 2012); Wendy Hui Kyong Chun. *Programmed Visions: Software and Memory* (Cambridge: the MIT Press, 2011); Nathan Ensmenger. *The Computer Boys Take Over: Computers, Programmers, and the Politics of Technical Expertise* (Cambridge: The MIT Press, 2010); David Alan Grier. *When Computers Were Human* (Princeton: Princeton University Press, 2005); Mar Hicks. *Programmed Inequality: How Britain Discarded Women Technologists and Lost Its Edge in Computing* (Cambridge: The MIT Press, 2017); Charlton McIlwain. *Black Software: The Internet and Racial Justice, form the AfroNet to Black Lives Matter* (Oxford: Oxford University Press, 2020); Dinesh C. Sharma. *The Outsourcer: The Story of India's IT Revolution* (Cambridge: The MIT Press, 2015); Jeffrey Yost. *Making IT Work* (Cambridge: The MIT Press, 2017).

us from the era in which *The Computer Boys Take Over* to one in which *The Computer Has Taken Over*. Thanks to the work of scholars including Alison Gazzard, Eden Medina, Benjamin Peters, and Joi Lisi Rankin, the history of computing is rich with works that have considered alternative paths that computing could have gone down, and while such works present a thought-provoking opportunity to imagine what could have been, Y2K presents a case study in some of the consequences of the path that was chosen.[85] This dissertation argues that there is more to the history of Y2K than merely a tale of deferred maintenance, and yet here this work builds upon the work of Lee Vinsel and Andrew Russell to draw attention to the importance of maintenance as a theme in the history of technology.[86] As was previously noted, Paul Edwards pointed to Y2K as showing how computers had become "the infrastructure of our infrastructures," and work by scholars including Christine Borgman, Julie Cohn, Lisa Parks, Nicole Starosielski, and further work by Edwards has provided a rigorous exploration of the physical materiality of literal computing infrastructure and the entanglement of computing related infrastructures with other infrastructural systems—an entanglement which Y2K made visible for many groups in the 1990s.[87]

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[85] See: Richard Barbrook. *Imaginary Futures: from Thinking Machines to the Global Village* (London: Pluto Press, 2007); Alison Gazzard. *Now the Chips Are Down: The BBC Micro* (Cambridge: The MIT Press, 2016); Ronald Kline. *The Cybernetics Moment: or Why We Call Our Age the Information Age* (Baltimore: Johns Hopkins University Press, 2015); Julien Mailland and Kevin Driscoll. *Minitel: Welcome to the Internet* (Cambridge: The MIT Press, 2017); Maher, Jimmy. *The Future Was Here: The Commodore Amiga* (Cambridge: The MIT Press, 2012); Eden Medina. *Cybernetic Revolutionaries: Technology and Politics in Allende's Chile* (Cambridge: The MIT Press, 2011); Benjamin Peters. *How Not to Network a Nation: The Uneasy History of the Soviet Internet* (Cambridge: The MIT Press, 2016).

[86] Lee Vinsel and Andrew Russell. *The Innovation Delusion: How Our Obsession with New Has Disrupted the Work That Matters Most* (New York: Currency, 2020).

[87] See: Christine L. Borgman. *From Gutenberg to the Global Information Infrastructure: Access to Information in the Networked World.* (Cambridge: The MIT Press, 2003); Christine L. Borgman. *Scholarship in the Digital Age: Information, Infrastructure, and the Internet.* (Cambridge: The MIT Press, 2010); Julie A. Cohn. *The Grid: Biography of an American Technology* (Cambridge: The MIT Press, 2017); Paul N. Edwards. "Infrastructure and Modernity: Scales of Force, Time, and Social Organization in the History of Sociotechnical Systems," in Thomas J. Misa, Philip Brey, and Andrew Feenberg (eds). *Modernity and Technology.* (Cambridge: The MIT Press, 2004);

As volumes like 1979's edited volume *The Computer Age: A Twenty-Year View* and 2021's edited volume *Your Computer Is On Fire*, the computer has long been (and continues to be) a technology onto which hopes and fears are projected. The work by scholars such as Morgan Ames, Christina Dunbar-Hester, and Daniel Greene, makes visible the clashes between the hopes pinned on computers as a panacea and the way these hopes get battered upon the rocks of reality; and their work helps ground an analysis of Y2K that remembers to consider not only the literal computers but the way people at the time were thinking about computers.[88] Furthermore, though Y2K is not primarily about the spread and uptake of the Internet, the proliferation of Y2K related websites as a means by which groups organized and information was shared, suggests that Y2K has a place in the unfolding of that history as well. Particularly as Y2K seemed to provide an early signal to some that the Internet could misinform as easily as it could inform, a point the Special Committee noted in recognizing "An enormous amount of Y2K information resides on the Internet," unfortunately "legitimate information is buried among

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Paul N. Edwards et al., *Understanding Infrastructure: Dynamics, Tensions and Design* (Ann Arbor: Deep Blue, 2007); Nathan Ensmenger. "The Environmental History of Computing." *Technology and Culture*. Vol. 59, No. 4 (October 2018): St-S33; Jennifer Gabrys. *Digital Rubbish: A Natural History of Electronics* (Ann Arbor: University of Michigan Press, 2017); Tung-Hui Hu. *A Prehistory of the Cloud* (Cambridge: The MIT Press, 2015); Brian Kahin and Ernest J. Wilson III (eds). *National Information Infrastructure Initiatives.* (Cambridge: The MIT Press, 1996); Lisa Parks and Nicole Starosielski. *Signal Traffic: Critical Studies of Media Infrastructures* (Urbana: University of Illinois Press, 2015); Nicole Starosielski. *The Undersea Network* (Durham: Duke University Press, 2015).

[88] See: Michael Adas. *Machines as the Measure of Man: Science, Technology, and Ideologies of Western Dominance* (Ithaca: Cornell University Press, 2014); Morgan Ames. *The Charisma Machine: The Life, Death, and Legacy of One Laptop per Child* (Cambridge: The MIT Press, 2019); James Brook and Iain Boal (eds). *Resisting the Virtual Life: The Culture and Politics of Information* (San Francisco: City Lights, 1995); Daniel Greene. *The Promise of Access: Technology, Inequality, and the Political Economy of Hope* (Cambridge: The MIT Press, 2021); David Golumbia. *The Cultural Logic of Computation* (Cambridge: Harvard University Press, 2009); Safiya Umoja Noble. *Algorithms of Oppression: How Search Engines Reinforce Racism* (New York: New York University Press, 2018); Gene Rochlin. *Trapped in the Net: The Unanticipated Consequences of Computerization* (Princeton: Princeton University Press, 1997); Howard Segal. *Technological Utopianism in American Culture* (Syracuse: Syracuse University Press, 2005); Elen Ullman. *Close to the Machine: Technophilia and Its Discontents* (New York: Picador, 1997).

overstated rumors and half-truths."[89] Thus, in addition to the scholarship on the genesis of computing technology, work on the development of the Internet also fits within this narrative. Janet Abbate's history of the Internet's development, and the way cultural and social factors influenced its development, is foundational for explaining how the Internet reached its 1990s form, even as Y2K provides an example of the continued playing out of those cultural and social factors—such that information about a computer exacerbated problem would now be discussed on computer enabled networks.[90] In the Y2K websites and message boards there is an example of what online socializing looked like before the rise of the companies that would eventually become synonymous with social networking. And the way these sites became important informational nodes speaks to Wendy Hui Kyong Chun's comment on how cyberspace "proffers direction and orientation in a world disoriented by technological and political change" even as it in turn "perpetuates the differences and contingencies it seeks to render accidental."[91] When accessed today, as they were in the process of writing this dissertation, Y2K websites like year2000.com and CassandraProject.org certainly appear charmingly dated, but they are also a reminder of Internet community before Facebook and YouTube. Thus, as works like Kevin Driscoll's exploration of early modem enthusiasts, Jessa Lingel's work on Craigslist, and Fred Turner's work on the Whole Earth 'Lectronic Link demonstrate, online community as it is now known is not the way online community has always been.[92]

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[89] U.S. Congress. Senate. Special Committee on the Year 2000 Problem. *Investigating the Impact of the Year 2000 Problem*. 11.
[90] Janet Abbate. *Inventing the Internet*. (Cambridge: The MIT Press, 2000).
[91] Wendy Hui Kyong Chun. *Control and Freedom: Power and Paranoia in the Age of Fiber Optics.* (Cambridge: The MIT Press, 2006). 59.
[92] Kevin Driscoll. *The Modem World: A Prehistory of Social Media.* (New Haven: Yale University Press, 2022); Jessa Lingel. *An Internet for the People: the Politics and Promise of Craigslist* (Princeton: Princeton University Press, 2020); Fred Turner. *From Cyberculture to Counterculture: Stewart Brand, the Whole Earth Network and the Rise of Digital Utopianism*. (Chicago: The University of Chicago Press, 2006).

Of course, Y2K did not mark the beginning of concerns about computer technology, nor did the successful remediation of the Y2K problem mark the end of such concerns. Cyrus Mody, Kelly Moore, and Matthew Wisnioski have documented the various ways engineers and scientists in the 1960s and 1970s responded to the competing technological visions of their times—and the cohorts they document would have been some of the same people who were responsible for truncating dates.[93] And even as some in the engineering profession were trying to balance their professional responsibilities with their social responsibilities, Matt Tierney has captured the critique of computing that was emerging alongside the spread of those complex systems throughout "the long seventies."[94] As Lily Geismer has discussed, the "Atari Democrats" in the 1980s sought to shift Democratic priorities "toward high-tech growth," and while one notable "Atari Democrat" was to be Vice President during the Y2K era (Al Gore), another was to be co-chair of the Senate's Special Committee on Y2K (Christopher Dodd).[95] Yet 1990s enthusiasm and hopefulness about the promise of computing was not without its discontents—who did not need Y2K to convince them to be wary of the spread of computer technology. In 1998, *The Utne Reader* would publish a supplement that treated Y2K as a hopeful opportunity to get society off of the dangerous course the embrace of computers had put society upon—but at the decade's start, in 1990, the publication had played home to Chellis Glenndinning's "Notes Towards a Neo-Luddite Manifesto" which (among other things) had

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[93] Cyrus C.M. Mody. *The Squares: US Physical and Engineering Scientists in the Long 1970s.* (Cambridge: The MIT Press, 2022); Kelly Moore. *Disrupting Science: Social Movements, American Scientists, and the Politics of the Military, 1945-1975.* (Princeton: Princeton University Press); Matthew Wisnioski. *Engineers for Change: Competing Visions of Technology in 1960s America.* (Cambridge: The MIT Press, 2016).
[94] Matt Tierney. *Dismantlings: Words Against Technology in the American Long Seventies.* (Ithaca: Cornell University Press, 2019).
[95] Lily Geismer. *Don't Blame Us: Suburban Liberals and the Transformation of the Democratic Party.* (Princeton: Princeton University Press, 2014). 270

called for the dismantling of computer technologies.[96] Neil Postman, in 1993, warned of the rise of a "totalitarian technocracy" he termed "technopoly," which consisted of "the deification of technology" and a culture that "finds its satisfaction in technology, and takes its orders from technology."[97] And Postman saw the computer as "the quintessential, incomparable, near-perfect machine for Technopoly."[98] Speaking from a less overtly hostile position towards the computer, in her memoir from the forefront of 1990s computing culture, Ellen Ullman ruminated on the surprising longevity of software noting "By the time a computer system becomes old, no one completely understands it. A system made out of old junky technology becomes, paradoxically, precious."[99] A point which Ullman drove home a couple of years later in the pages of *Wired Magazine* as she noted "Y2k is showing everyone what technical people have been dealing with for years: the complex, muddled, bug-bitten systems we all depend on, and their nasty tendency toward the occasional disaster."[100]

That Y2K did not result in a computer driven catastrophe, did not mean that Y2K's passage resulted in a diminishing in critical attitudes towards technology. Indeed, as scholarship (and activism) in the first two decades of the twenty-first century attests, the computer remains very much a site of hope, anxiety, and contestation. Scholarship in the first two decades of the twenty-first century has pointed to a keen attention to computing's continuing and developing risks. Vital work has been done by Virginia Eubanks on how algorithmic systems police and control vulnerable populations, Safiya Umoja Noble has explored how racist and misogynistic

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[96] Chellis Glendinning. "Notes Toward a Neo-Luddite Manifesto." *Utne Reader.* (March/April 1990). Archived at archive.org (https://ia601803.us.archive.org/29/items/the-anarchist-library-full-list-of-pdfs-nov-2020/chellis-glendinning-notes-toward-a-neo-luddite-manifesto.pdf).
[97] Neil Postman. *Technopoloy: The Surrender of Culture to Technology* (New York: Vintage Books, 1993). 71.
[98] Ibid, 111.
[99] Ellen Ullman. *Close to the Machine: Technophilia and Its Discontents.* (New York: Picador, 1997). 117.
[100] Ellen Ullman. "The Myth of Order." *Wired Magazine* 7, No.4 (April 1999): 126-129, 183-184. 126.

biases get built in (and thus replicated) in algorithmic code, Meredith Broussard has discussed the hazards of seeking computer based solutions for complex social problems, and Ruha Benjamin has explored how digital technologies re-entrench the status quo.[101] And work by Lilly Irani, David Nemer, Ramesh Srinivasan, and Xiaowei Wang importantly shifts the focus on computing and technocultures away from narratives that are too often US focused.[102] Writing about the tendency for technological narratives to oversimplify matters, Srinivasan notes, "the way we choose to historicize technology…shapes our beliefs and assumptions about what it can be. Creation myths shape visions of the future."[103] And this dissertation seeks to intervene in the current discussions around the hazards of computers in daily life, by trying to cut through the too often oversimplified narratives and myths about Y2K, in order to better place it within the history of computing, and to consider how the "myths" about technologically exacerbated risks also "shape visions of the future."

A core contention of this dissertation is that Y2K cannot be exclusively told as a history that focuses only on the most excessively apocalyptic views, nor can it be told as a history that focuses solely on the Y2K's technical side. Rather, to properly understand it both of these sides of the story must be told in tandem with each other—for they both represent the story of Y2K. While care is taken throughout this dissertation to distinguish between doomsday predictions and

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[101] Ruha Benjamin. *Race After Technology* (Cambridge: Polity Press, 2019); Meredith Broussard. *Artificial Unintelligence: How Computers Misunderstand the World* (Cambridge: The MIT Press, 2018); Virginia Eubanks. *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor* (New York: St. Martin's Press 2017); Safiya Umoja Noble. *Algorithms of Oppression: How Search Engines Reinforce Racism* (New York: New York University Press, 2018).

[102] Lilly Irani. *Chasing Innovation: Making Entrepreneurial Citizens in Modern India.* (Princeton: Princeton University Press, 2019); David Nemer. *Technology of the Oppressed: Inequality and the Digital Mundane in Favelas of Brazil.* (Cambridge: The MIT Press, 2022); Ramesh Srinivasan. *Whose Global Village: Rethinking How Technology Shapes Our World.* (New York: New York University Press, 2017); Xiaowei Wang. *Blockchain Chicken Farm and Other Stories of Tech in China's Countryside.* (New York: FSG Originals x Logic, 2020).

[103] Srinivasan, *Whose Global Village*. 30.

more common predictions—this work also considers how Y2K fits within thinking about technologically exacerbated, and generated, disasters and calamities.[104] While the extent to which Y2K was foreseen, and the degree to which it featured a hard deadline, sets it apart from many other instances in the history of disasters—the public conversations that took place around Y2K were informed by references to past events in the history of disasters including major storms and famous wrecks, such as the Titanic.[105] Or, to put it slightly differently, in the lead up to Y2K many individuals clearly sought to make sense of Y2K by drawing associative lines between it and more familiar instances and types of disasters. And yet the need to draw such connections emerged largely due to the sense that there was something new about the type of hazard Y2K represented. Thus, in addition to Charles Perrow's previously mentioned work on "Normal Accidents," this work draws on Kai Erikson's thinking about the "new species of trouble" represented by "technological disasters," and while Y2K (thankfully) never resulted in a

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[104] See: Kai T. Erikson. *A New Species of Trouble: The Human Experience of Modern Disasters* (New York: W. W. Norton Company, 1994); Anique Hommels, Jessica Mesman, and Wiebe E. Bijker (eds). *Vulnerability in Technological Cultures: New Directions in Research Governance* (Cambridge: The MIT Press, 2014); Peter G. Neumann. *Computer Related Risks.* (New York: ACM Press, 1995); Edward Tenner. *Why Things Bite Back: Technology and the Revenge of Unintended Consequences* (New York: Knopf Books, 1996); Langdon Winner. *Autonomous Technology: Technics-out-of-Control as a Theme in Political Thought* (Cambridge: The MIT Press, 1977).

[105] See: Steven Biel (ed). *American Disasters* (New York: NYU Press, 2001); Susanna Hoffman and Anthony Oliver-Smith. *Catastrophe and Culture: The Anthropology of Disaster* (Santa Fe: School of America Research Press, 2002); Eva Horn. *The Future as Catastrophe: Imagining Disaster in the Modern Age* (New York: Columbia University Press, 2018); Marie-Helene Huet. *The Culture of Disaster* (Chicago: The University of Chicago Press, 2012); Cynthia Kierner. *Inventing Disaster: The Culture of Calamity from the Jamestown Colony to the Johnstown Flood* (Chapel Hill: The University of North Carolina Press, 2019); Scott Gabriel Knowles. *The Disaster Experts: Mastering Risk in Modern America* (Philadelphia: The University of Pennsylvania Press, 2011); Dennis Mileti. *Disasters by Design: A Reassessment of Natural Hazards in the United States* (Washington: Joseph Henry Press, 2004); Arwen Mohun. *Risk: Negotiating Safety in American Society* (Baltimore: Johns Hopkins University Press, 2013); David Moss. *When All Else Fails: Government as the Ultimate Risk Manager* (Cambridge: Harvard University Press, 2002); Gerard Passannante. *Catastrophizing: Materialism and the Making of Disaster* (Chicago: University of Chicago Press, 2019); Ronald Perry and E.L. Quarantelli. *What is a Disaster? New Answers to Old Questions* (Xlibirs, 2005); Jacob Remes. *Disaster Citizenship: Survivors, Solidarity, and Power in the Progressive Era* (Urbana: University of Illinois Press, 2016); Jacob Remes and Andy Horowitz (eds). *Critical Disaster Studies* (Philadelphia: The University of Pennsylvania Press, 2021); Kevin Rozario. *The Culture of Calamity: Disaster and the Making of Modern America* (Chicago: University of Chicago Press, 2007); Kathleen Tierney. *The Social Roots of Risk: Producing Disasters, Promoting Resilience* (Stanford; Stanford University Press, 2014); Kathleen Tierney. *Disasters: A Sociological Approach.* (Cambridge: Polity Press, 2019).

genuine disaster, Erikson's attention to such "technological disasters" importantly "being of human manufacture" helps focus the onus of responsibility for an event like Y2K not simply on technology but on how human decisions pushed particular technologies to the threatening point.[106] Beyond theoretically placing Y2K in a disaster framework, this dissertation is inspired by Scott Gabriel Knowles's arguments for placing disaster history in the history of technology (and vice versa); Knowles's attention to the way "Disaster investigations aspire to soothe public fears and restore faith in experts" helps contextualize much of the investigative work that occurred in the run up to Y2K as such hearing and testimony sought to "soothe" and "restore" by drawing attention to efforts to prevent the disaster from occurring.[107] Furthermore, that there were not more Y2K post-mortems can be understood as related to the fact that Y2K did not result in a disaster necessitating explanatory investigations. When things go wrong there is an effort to make sense of the failure to ensure it never happens again, when things go right there is seldom as much pressure for an explanation as to why. Knowles's work on the emergence of disaster expertise provides another important touchstone for this work, even as Y2K demonstrates how a host of computer programmers who did not necessarily see themselves as being in the field of disaster prevention were suddenly enlisted into that cause—and thus in line with Knowles's work Y2K provides another example wherein what it means to be a "disaster expert" shifts as new risks emerge.[108] Scholarship by Michelle Landis Dauber, Jacob A.C. Remes, and David Moss, all provide essential insights into the role of the federal government in managing risks and responding to disasters—which provided essential context for making sense

[106] Kai T. Erikson. *A New Species of Trouble: The Human Experience of Modern Disasters* (New York: W. W. Norton Company, 1994). 141-142.
[107] Scott Gabriel Knowles. "Learning from Disaster? The History of Technology and the Future of Disaster Research." *Technology and Culture* 55. (October 2014): 773-784. 782.
[108] Scott Gabriel Knowles. *The Disaster Experts: Mastering Risk in Modern America* (Philadelphia: The University of Pennsylvania Press, 2011).

of the government concern and response around Y2K—after all, it was not as if Y2K was the first time the US government (federal and local) felt it would need to respond to risks.[109] Granted, Y2K was not only perceived of as a risk by technical experts and government sources, there were also public groups that mobilized out of a sense that the government was not doing enough, and this dissertation's thinking about the risk perception and response of Y2K activists draws on Michelle Murphy's work on office workers responding to the techno-scientifically generated hazards of their workplaces, Aya Hirata Kimura's work on citizen science in the aftermath of the Fukushima Daiichi Nuclear Power Plant disaster, and Lindsay Thomas's work on how the US security apparatus seeks to train citizens to respond to catastrophes.[110] While disaster studies and the history of disaster have provided many essential works and intellectual tools from which this dissertation draws, the history of disaster's focus on the slow process by which decisions made decades ago can lead to risks and disasters many decades later—as powerfully explored in Andy Horowitz's *Katrina*—has provided the framework for thinking about how the eventual risks of a programming decision made in the middle of the twentieth century could be ignored until the point when it threatened to unleash havoc.[111]

In addition to Perrow's treatment of Y2K in *Normal Accidents*, amongst some disaster scholars Y2K has been of particular interest as a sort of case study of risk perception, and an event in which thinking about worst case scenarios actually involved warnings being heeded. In

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[109] Michele Landis Dauber. *The Sympathetic State: Disaster Relief and the Origins of the American Welfare State* (Chicago: University of Chicago Press, 2013); David Moss. *When All Else Fails: Government as the Ultimate Risk Manager* (Cambridge: Harvard University Press, 2002); Jacob Remes. *Disaster Citizenship: Survivors, Solidarity, and Power in the Progressive Era* (Urbana: University of Illinois Press, 2016).

[110] Kimura, Aya Hirata. *Radiation Brain Moms and Citizen Scientists: The Gender Politics of Food Contamination after Fukushima* (Durham: Duke University Press, 2016); Murphy, Michelle. *Sick Building Syndrome and the Problem of Uncertainty: Environmental Politics, Technoscience, and Women Workers* (Durham: Duke University Press, 2006); Thomas, Lindsay. *Training for Catastrophe: Fictions of National Security after 9/11* (Minneapolis: The University of Minnesota Press, 2021).

[111] Andy Horowitz. *Katrina: A History, 1915-2015* (Cambridge: Harvard University Press, 2020).

particular, Karen Cerulo, Lee Clarke, and Robert Wuthnow have all held up Y2K as an instance that demonstrates how taking the threat of "the worst" seriously can lead to necessary action.[112] While this dissertation echoes those scholars' emphasis on certain professions being more attuned to risk, this dissertation further juxtaposes the clash that Y2K reveals between risk perception and the hopeful attitudes that more generally surrounded the ascent of computer technology. Thus, Y2K serves as an example of how a society makes sense of the risks it faces, and here this dissertation builds on the theoretical work of Ulrich Beck, Mary Douglas and Aaron Wildavsky.[113] Douglas has argued that "The political question is always about acceptable risk," and the responses to Y2K (many of which would be questioned after the rollover) continually demonstrate that computing's risks (to essential infrastructure, for instance) were perceived as being of such great seriousness that overreaction was seen as preferable to underreaction.[114] Furthermore, Y2K serves to place computers within the framework of Beck's "risk society," after all "In risk societies, the consequences and successes of modernization become an issue with the speed and radicality of processes of modernization," and the spread of complex computerized systems can certainly be seen as one of modernization's "successes" even as Y2K reveals one of the corollary "consequences."[115] And pushing further into philosophical inspirations, this dissertation wrestles with Paul Virilio's warning, "Unless we are deliberately

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[112] See: Karen Cerulo. *Never Saw it Coming: Cultural Challenges to Envisioning the Worst* (Chicago: The University of Chicago Press, 2006); Lee Clarke. *Worst Cases: Terror and Catastrophe in the Popular Imagination* (Chicago: The University of Chicago Press, 2005); Robert Wuthnow. *Be Very Afraid: The Cultural Response to Terror, Pandemics, Environmental Devastation, Nuclear Annihilation, and Other Threats* (Oxford: Oxford University Press, 2010).

[113] Ulrich Beck. *Risk Society: Towards a New Modernity* (Los Angeles: Sage, 1986); Ulrich Beck. *World at Risk* (Cambridge: Polity Press, 2009); Mary Douglas. *Risk and Blame: Essays in Cultural* Theory (New York: Routledge, 1992); Mary Douglas, and Aaron Wildavsky. *Risk and Culture* (Berkeley: The University of California Press, 1982); Niklas Luhmann. *Risk: A Sociological Theory* (New Brunswick: Transaction Publishing, 2002); Deborah Lupton. *Risk (second edition)*. (London: Routledge, 2016).

[114] Mary Douglas. *Risk and Blame: Essays in Cultural* Theory (New York: Routledge, 1992). 44.

[115] Ulrich Beck. *World at Risk* (Cambridge: Polity Press, 2009). 6.

forgetting *the invention of the shipwreck* in the invention of the ship or the *rail accident* in the advent of the train, we need to examine the hidden face of new technologies before that face reveals itself in spite of us." [116] To avoid being surprised by this "hidden face," Virilio highlighted the need to identify "the original accident" embedded within new technologies.[117] This dissertation is largely inspired by Virlio's provocation, though it moves away from ships and trains, to instead consider what the "original accident" and the "wreck" might be for computing—arguing that Y2K fits well within Virilio's formulation.

Beyond the serious consideration of risk perception and disaster preparedness, there is the matter of the millenarian apocalypticism which bubbled up surrounding Y2K. A contention of this dissertation is that placing too much emphasis on the apocalyptic approaches to Y2K can function as a distraction from other more salient parts of Y2K's history, yet the place of the apocalyptic in Y2K (as a media narrative, as an anxiety to tamp down, and as a real thing) cannot be ignored. Making sense of Y2K requires a recognition of the way that this computer driven threat synched up perfectly with anxious attitudes regarding a millennium's end.[118] Even without Y2K, it is doubtless that some would have been prophesizing doom for the end of 1999 and the start of 2000, but Y2K provided many with fertile soil in which to plant their end of days

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[116] Paul Virilio. *Open Sky*. (London: Verso Books, 2008). 40.
[117] Ibd.
[118] Michael Barkun. *Disaster and the Millennium* (Syracuse: Syracuse University Press, 1974); John Collins. *The Apocalyptic Imagination: An Introduction to Jewish Apocalyptic Literature* (Grand Rapids: William B. Eerdmans Publishing Company, 2016); Frank Kermode. *The Sense of an Ending: Studies in the Theory of Fiction with a New Epilogue* (Oxford: Oxford University Press, 2000); Leon Festiner, Henry Riecken, and Stanley Schachter. *When Prophecy Fails: A Social and Psychological Study of a Modern Group that Predicted the Destruction of the World.* (New York: Harper Torchbooks, 1956); Stephen Jay Gould. *Questioning the Millennium: A Rationalist's Guide to a Precisely Arbitrary Countdown (Revised Edition)* (New York: Harmony Books, 1999); Catherine Keller. *Apocalypse Now and Then: A Feminist Guide to the End of the World* (Minneapolis: Fortress Press, 1996); Thomas Robbins and Susan J. Palmer (ed). *Millennium, Messiahs, and Mayhem: Contemporary Apocalyptic Movements* (New York: Routledge, 1997); Eugen Weber. *Apocalypses: Prophecies, Cults, and Millennial Beliefs through the Ages* (Cambridge: Harvard University Press, 1999); Lisa Vox. *Existential Threats: American Apocalyptic Beliefs in the Technological Era* (Philadelphia: The University of Pennsylvania Press, 2017).

beliefs. Work by Paul Boyer and Daniel Wojcik provides essential context for the prophetic religious groups who latched on to Y2K, with their work drawing attention to the way computers were seen as an apocalyptic vector by some religious groups even before Y2K appeared as a major topic of concern.[119] Encompassing and also moving beyond the specifically religious response, Jenny Rice's consideration of how evidence works and is mobilized—"evidence as an *act* rather than a *thing*"—helps to make sense of the way that various groups (community activists—religious and not) reinterpreted things like technical assessments and government reports about Y2K to fit within their own pre-existing narratives.[120] Furthermore, as Kate Dorsch has shown in the context of UFOs, and as Joshua Blu Buhs has commented on regarding Bigfoot—conspiratorial responses to official narratives often carry not only a mistrust of governmental and scientific authority, but in a context of disempowerment can make some feel (as Buhs noted about Bigfoot) "that the elite consensus was wrong," and thus those challenging that consensus "made themselves feel powerful" as though "They understood reality, its workings, better than scientists."[121] A core element of this dissertation's argument is that for all of the silly hyperbole bound up in discussions of "the end of the world," Y2K still signaled for many people that whether they had previously realized it or not, the world as they had known it truly had undergone a transformation, and that the world in which they now found themselves was one in which daily life relied on the computer. And thus, as Rosalind Williams has

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[119] Paul Boyer. *When Time Shall Be No More: Prophecy Belief in Modern American Culture* (Cambridge: Belknap Press of Harvard University, 1992); Daniel Wojcik. *The End of the World as We Know It: Faith, Fatalism, and Apocalypse in America* (New York: NYU Press, 1997).
[120] Jenny Rice. *Awful Archives: Conspiracy Theory, Rhetoric, and Acts of Evidence* (Columbus: The Ohio State University Press, 2020). 12. Italics in original text.
[121] Joshua Blu Buhs. *Bigfoot: The Life and Times of a Legend.* (Chicago: University of Chicago Press, 2009); Dorsch, Kate. *Reliable Witnesses, Crackpot Science: UFO Investigations in Cold War America, 1947-1977.* (Publication Number 13808338). Doctoral Dissertation, The University of Pennsylvania, 2019. quoted segments are from Buhs, 20.

wonderfully explored in regards to an earlier similarly epochal shift, "What we really want to know is about the end of *our* world."[122] With Y2K serving as a moment in which many people—from programmers to Congress members to reporters to community members—found themselves forced to make sense of their place in a world where the computer had been anointed king (or some feared raised to the stature of a god). Indeed, with its clash between the glimmering promises of the high-tech future and the threat of a world brought to its knees by widespread computing failures, Y2K was something of a perfect synthesis of the digital sublime and the apocalyptic sublime.[123]

To understand Y2K within a broader trajectory, and history, of technological risks and technological hazards is to place it in a chain of events that, arguably, goes back to Plato's warnings in *Phaedrus* that the technology of writing would have deleterious impacts through to current discussions around the Anthropocene (as well as a host of computer related risks). Attention to human caused, techno-scientifically exacerbated risks, certainly expanded in the middle of the 19th century wherein George Perkins Marsh (in the United States) and Eugène Huzar (in France), respectively warning that humanity's pursuit of technological power would have unintended, and negative, impacts on the world (ecological and societal).[124] Yet, concerns of a technologically driven apocalypse truly pushed into popular attention amidst the atomic

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[122] Rosalind Williams. *The Triumph of Human Empire: Verne, Morris, and Stevenson at the End of the World* (Chicago: The University of Chicago Press, 2013). 342. Italics in original text.
[123] Vincent Mosco. *The Digital Sublime: Myth, Power, and Cyberspace* (Cambridge: The MIT Press, 2004); David Nye. *American Technological Sublime* (Cambridge: The MIT Press, 1996); David Nye. *Seven Sublimes* (Cambridge: The MIT Press, 2022); Miles Orvell. *Empire of Ruins: American Culture, Photography, and the Spectacle of Destruction* (Oxford: Oxford University Press, 2021).
[124] George Perkins Marsh. *Man and Nature: Edited, with a New Introduction by David Lowenthal.* (Seattle: University of Washington Press, 2003); Eugène Huzar. *La Fin Du Monde Par La Science.* (Alfortville: Collections Chercheurs D'Ere, 2007).

anxiety of the twentieth century.[125] And in the context of the rising public fear about the awesome destructive might of nuclear weapons, as Kenneth Rose put it, "the nuclear apocalyptic spoke to a generation that saw the Final Days not as a biblical abstraction, but as a concrete, immediate, even probable reality."[126] Granted, nuclear weapons were not the only techno-scientifically exacerbated concern of the twentieth century—as Rachel Carson's *Silent Spring* attests—and many of the social critics speaking out against the danger of nuclear war (such as Lewis Mumford and Erich Fromm, to name but two) were also attuned to the rising power of computers.[127] With these ascendent computer technologies, as Rebecca Slayton and Paul Edwards have shown, being themselves entangled in the nuclear arms race.[128] Y2K's post-Cold War moment was one of somewhat relaxed nuclear anxiety—even as a major government concern around Y2K was the computers at nuclear power plants and in use regarding nuclear weapons—but it was a shift in which the technological danger shifted off of nuclear weapons and onto seemingly banal computer systems. Y2K may have had the potential to signal that after the Cold War had come "the code war," as *The New York Times* referred to Y2K at one point, yet

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[125] Kate Brown. *Plutopia: Nuclear Families, Atomic Cities, and the Great Soviet and American Plutonium Disasters.* (Oxford: Oxford University Press, 2013); Tracy C. Davis. *Stages of Emergency: Cold War Nuclear Civil Defense.* (Durham: Duke University Press, 2007); Michael D. Gordin and G. John Ikenberry (eds). *The Age of Hiroshima.* (Princeton: Princeton University Press, 2020); M. Susan Lindee. *Rational Fog: Science and Technology in Modern War.* (Cambridge: Harvard University Press, 2020); Kenneth D. Rose. *One Nation Underground: The Fallout Shelter in American Culture.* (New York: New York University Press, 2001); Frank Sauer. *Atomic Anxiety: Deterrence, Taboo and the Non-Use of Nuclear Weapons.* (London: Palgrave Macmillan, 2016); Spencer R. Weart. *The Rise of Nuclear Fear.* (Cambridge: Harvard University Press, 2012).

[126] Rose. *One Nation Underground.* 77.

[127] Rachel Carson. *Rachel Carson: Silent Spring & Other Writings on the Environment.* (Washington: *Library of America,* 2018); Erich Fromm. *May Man Prevail? An Inquiry Into the Facts and Fictions of Foreign Policy.* (Garden City: Doubleday & Company, Inc., 1961); Lewis Mumford. *In the Name of Sanity.* (New York: Harcourt, Brace and Company, 1954).

[128] Paul Edwards. *The Closed World: Computers and the Politics of Discourse in Cold War America* (Cambridge: The MIT Press, 1996); Rebecca Slayton. *Arguments That Count: Physics, Computing, and Missile Defense, 19149-2012* (Cambridge: The MIT Press, 2013).

the "code war" was quickly displaced by the War on Terror at the twenty-first century's start.[129] In some respects, Y2K appears almost quaint in the face of the twenty-first century's concerns of techno-scientifically exacerbated crises such as climate change and a raft of computer related concerns (from AI to misinformation to algorithmic bias).[130] Nevertheless, Y2K provides a prelude to twenty-first century technological concerns by raising the specter of a problem requiring a coordinated worldwide solution due to its highly distributed form, and which presents the computer in all its Janus faced raiment as the solution to the problems which it has itself caused.

To contend with Y2K is to come up against a variety of contentious, if not "hazardous," terms. Indeed, words like technology, disaster, crisis, and emergency, are all over the primary sources on Y2K. These largely function as actor terms; however, in seeing the slapdash fashion with which these terms are used it is clear why scholars have sometimes approached some of these terms warily. "Technology," as Leo Marx notably described it, is "a hazardous concept," a term that "did not catch on in America until around 1900," but a term that came to fill a certain explanatory "void" whereby a "term that formerly had named a field of study now referred to the society's entire stock of technical knowledge and equipment."[131] In articulating the specifically "hazardous" quality of the term, Marx drew attention to the ways technology has become bound

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[129] Barnaby J. Feder and Andrew C. Revkin. "Vast Efforts To Fix Computers Defended (and It's Not Over)." *The New York Times*. January 1, 2000. A1, A13.

[130] Regarding climate change and the Anthropocene, see: Chistophe Bonneuil and Jean-Baptiste Fressoz. *The Shock of the Anthropocene.* (New York: Verso Books, 2017); Amitav Ghosh. *The Great Derangement: Climate Change and the Unthinkable.* (Chicago: The University of Chicago, 2016); J.R. McNeill and Peter Engelke. *The Great Acceleration: An Environmental History of the Anthropocene since 1945.* (Cambridge: The Belknap Press of Harvard University Press, 2014); Rob Nixon. *Slow Violence and the Environmentalism of the Poor.* (Cambridge: Harvard University Press, 2011); Naomi Oreskes and Erik M. Conway. *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming.* (New York: Bloomsbury Press, 2010); Anna Lowenhaupt Tsing. *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins.* (Princeton: Princeton University Press, 2015);

[131] Leo Marx. "Technology: The Emergence of a Hazardous Concept." *Technology and Culture* 51, No. 3 (July 2010): 561-577. 562, 575.

up with the concept of progress, and the way technology is vested with "agency" and "the power to initiate change, as if it were capable of altering the course of events, of history itself" thereby distracting "attention from the human."[132] Another term that has been elevated to "hazardous" status, is the term "crisis," which as Rosalind Williams describes it "is filling a semantic void related to the unprecedented dominance of technology in history."[133] As Williams further explains, in unpacking the history of the term, "Crisis is no longer a turning point in history but the ongoing condition of history, part of its normal operation," thus "crisis" (or "crises") disrupts the progress narrative of which technology had been a part and instead elevates "a pattern of crisis, of spreading centers of loss and calamity" as yet "another historical pattern."[134] And, of course, the meaning of "hazardous" is itself a rather "hazardous" concept as one shifts from the history of technology towards the history of disasters and disaster studies. Kathleen Tierney notes that "hazard" is a term which "refers to an ongoing condition that has the potential for causing a disaster," while "disaster" along with terms like "vulnerability," "resilience," "risk," "emergency," and "catastrophe" are all terms that are often used nearly synonymously in popular parlance, but which denote particular conditions and situations within the history of disasters.[135]

How then to contend with Y2K? To refer to it as a "technology crisis" (or a "computer crisis") seems to be doubly "hazardous," even as to refer to it as such represents less an act of passing scholarly judgment than a simple acknowledgment that the historical actors were themselves referring to it in that way. Williams observes, "Today historians of technology are constantly evoking crisis," and while this dissertation certainly is guilty of "evoking crisis," in

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[132] Ibid. 577.
[133] Rosalind Williams. "Crisis: The Emergence of Another Hazardous Concept." *Technology and Culture* 62, No. 2 (April 2021): 521-546. 523.
[134] Ibid, 532, 542.
[135] Kathleen Tierney. *Disasters: a Sociological Approach.* (London: Polity Press, 2019). 6-7.

doing so it is trying to accurately describe the perspectives found in the historical record.[136] Though she does not specifically mention Y2K, Williams seems like she could be talking about it when she notes that there is a temptation to "call the situation a crisis, when it could more mundanely but accurately be described as deferred maintenance." [137] While this seems like it might be an appropriate description had Y2K remained an isolated concern of the IT community, by the point that the Senate has convened a Special Committee to investigate a subject, it seems there is more afoot than "deferred maintenance" even if such deferral is at the crisis's core. Granted, "crisis" was hardly the only term used by the historical actors—and it is notable here that the aforementioned Special Committee was on "the Year 2000 Technology Problem" not "the Year 2000 Technology Crisis." With the term "problem" carrying within itself the promise of a "solution" or "answer." "Hazardous" terms are all over Y2K—and as this dissertation shows they are to be found being deployed not only by the (literally) apocalyptically minded, but also by IT professionals, and Congressional committees. Nevertheless, Y2K shows the "hazardous" nature of these terms, for in discussions around Y2K "technology" was often framed as though it had agency—even if attention was paid to the human role in initially truncating dates (thereby creating the problem), by the 1990s computer technologies were often described as though they had slipped their reins. Similarly, to the extent that words like "crisis" were often used to frame Y2K, there is a clear twinning of progress and crisis alongside concern over what the tradeoffs entail.

This dissertation is a work of history, not philosophy. Nevertheless, undergirding much of the anxiety around Y2K was clearly an effort to make sense of what it meant to live in a world

[136] Williams. ""Crisis: The Emergence of Another Hazardous Concept." 535.
[137] Ibid, 536.

that had become so dependent on computer technology. And this question, of how to live, is certainly a philosophical one. As Langdon Winner has shown, the fear of technology escaping human control has a long history, one which has consistently challenged people and societies to reevaluate their relationship to those technologies.[138] Yet, Y2K provides something of a diagonal move here in that it pushes people and societies to confront not so much a situation where technology is *out* of control as a sense that technology is now *in* control. Philosophical concern with how to live in a world transformed by technology was of interest for many twentieth-century social critics and philosophers: ranging from Hannah Arendt's observations in *The Human Condition* wherein even as she rejected the idea that "men as such adjust to or become the servants of their machines" she acknowledged that "as long as the work at the machines lasts, the mechanical process has replaced the rhythm of the human body;"[139] to Hans Jonas's plea in *The Imperative of Responsibility* to place greater attention on the "prophecy of doom" over the "prophecy of bliss" in evaluating major technological shifts;[140] to Günther Anders brooding assessment that humanity had built a world in which it had gradually made itself obsolete.[141] The introduction to this dissertation began with Peter de Jager musing about the lack of a steering wheel on the information highway, yet as Erich Fromm articulated in 1968 in trying to formulate a "humanized technology," "If people are not aware of the direction in which they are going,

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[138] Langdon Winner. *Autonomous Technology: Technics-out-of-Control as a Theme in Political Thought*. (Cambridge: The MIT Press, 1977).
[139] Hannah Arendt. *The Human Condition.* (Chicago: Chicago University Press, 1958). 147.
[140] Hans Jonas. *The Imperative of Responsibility: In Search of an Ethics for the Technological Age.* (Chicago: University of Chicago Press, 1984).
[141] Günther Anders. *Die Antiquiertheit des Menschen 1: Über die Seele im Zeitalter der zweiten industriellen Revolution.* (München: Verlag C.H. Beck OHG, 1956); Günther Anders. *Die Antiquiertheit des Menschen 2: Über Zerstörung des Lebens im Zeitalter der dritten industriellen Revolution.* (München: Verlag C.H. Beck OHG, 1980);

they will awaken when it is too late and when their fate has been irrevocably sealed."[142] And this challenge, this need to make sense of our place in a world altered by the technologies humanity has unleashed, was a challenge pre-Y2K, a challenge during Y2K, and will still be a challenge whenever it is this sentence is being read. This situation is one the philosopher Shannon Vallor has attested to in her interrogation of what it means to live well in a technology filled world, amidst her observation that "emerging science and technology now condition virtually *every* aspect of life."[143] As technology is an inescapable part of our "technosocial" world, Vallor argues "that predicting the general shape of tomorrow's innovations is not, in fact our biggest challenge: far harder, and more significant is the job of figuring out what we will *do* with these technologies once we have them, and what they will do with us."[144] And in their reactions to Y2K, one of the things that can be seen are the attempts by many different actors in the 1990s trying to navigate the tension that Vallor highlights—a tension which has persisted long after Y2K.

The analysis and arguments present in this dissertation owe a major debt to the aforementioned scholars and theorists whose work has touched upon the history of technology and the ways societies perceive risks. Nevertheless, the largest debt is undoubtedly owed to the thinking of Lewis Mumford, whose warnings throughout the middle part of the twentieth century seemed to be unfolding by that century's close. While some within the history of technology and STS still pay homage to the technic eras Mumford expounded upon in *Technics and Civilization*, this dissertation is couched in the more foreboding assessment that appears in Mumford's post-

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[142] Erich Fromm. *The Revolution of Hope: Toward a Humanized Technology.* (New York: Harper & Row, Publishers, 1968). 27.
[143] Shannon Vallor. *Technology and the Virtues: A Philosophical Guide to a Future Worth Wanting.* (Oxford: Oxford University Press, 2016). 33. Italics in original.
[144] Ibid, 5. Italics in original.

WWII thinking. In 1970, at a point when the computer was ascendant if not yet dominant, Mumford was already warning against "the exorbitant hopes for a computer dominated society."[145] Shuddering at the specter of the all-encompassing system of total technological control that he dubbed "the megamachine," Mumford saw the "Central Computer" as the megamachine's "Divine King, in a transcendent, electronic form," one displaying the "authentic divine characteristics" of "omnipresence and invisibility."[146] And throughout this dissertation it is clear how Y2K demonstrated computers "omnipresence" even as Y2K made the computer's power significantly more visible. Mumford's friend the computer scientist Joseph Weizenbaum had similarly expressed trepidation about the spread of computers and of technologies reaching a point at which people did not fully understand their functioning, but had become totally dependent on those systems, which prompted Weizenbaum to warn "If we depend on that machine, we have become servants of a law we cannot know, hence of a capricious law. And that is the source of our distress."[147] And one way to make sense of Y2K is to see it through the lens of exactly such "distress."

Y2K was not inevitable, and that Y2K would be successfully remediated was not inevitable either. Rather, despite the heavy focus Y2K places on computer systems, this is ultimately a story involving the decisions that are made by human beings. Warning against the tendency to treat technological developments (for good or bad) as inevitable, Joseph Weizenbaum warned that "The myth of technological and political and social inevitability is a powerful tranquilizer of the conscience. Its services is to remove responsibility from the

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[145] Lewis Mumford. *The Pentagon of Power.* Vol. 2 of *The Myth of the Machine. Technics and Human Development* (New York: Harvest/Harcourt Brace Jovanovich, 1970). 191.
[146] Ibid, 273
[147] Joseph Weizenbaum. *Computer Power and Human Reason: From Judgement to Calculation.* (San Francisco: W.H. Freeman and Company, 1976). 41.

shoulders of everyone who truly believes in it. But, in fact, there *are* actors!"[148] And this dissertation presents the history of those "actors," and how they were spread across "technological and political and social" areas—that forced them to contend with precisely what their "responsibility" was as it regarded this computer exacerbated danger.

This dissertation contends that Y2K represents an important event in the history of computing—both in terms of the technical side of the history of computing, and in terms of the history of computing's connection to how societies have made sense of their entanglements with computer technologies. Thus, central to this dissertation are three intertwined arguments about Y2K: first, that Y2K represented a very real danger—a serious threat to the computerized systems that undergird so much of daily life, and that this danger was ameliorated thanks to the work of a legion of too often unsung figures who sounded the alarm, maintained the pressure, and completed the necessary tasks. Second that when we look back at the predictions that were being made surrounding what would happen, it important not to dwell on the most hyperbolic but to recognize how much uncertainty existed even amongst the expert sources at the time—and how their forecasts changed from 1993 to 1999. And third, but most importantly, that what makes Y2K so significant—and what elevated it to a matter of such public concern—was the way that it forced a public reckoning not with "the end of the world" but with what "the world as we have come to know it" meant by the last decade of the twentieth century. And what it meant, was that as Representative Jim Turner eloquently put it at the House's final Y2K hearing: "every facet of our life now depends upon our computers working well."[149]

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[148] Ibid, 241.
[149] U.S. Congress. House. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and the Subcommittee on Technology of the Committee on Science. *Year 2000 Computer Problem: Did the World Overreact, and What Did We Learn?* 8.

Chapter Overview

An emphasis on the unrelenting forward march of time was a consistent feature of the discourse surrounding Y2K. With commentators, technical professionals, government officials, journalists, and community activists alike consistently drawing attention to the number of months, weeks, and days that remained until the looming deadline. While there were occasional jokes made about how Y2K related disruptions would send civilization back several centuries, alongside periodic jests that the government should simply pass a law to turn back the clock, a recurring feature of the discussions on Y2K was the knowledge that every passing hour brought the year 2000 irresistibly closer. Thus, those who were paying attention to Y2K, were closely focused on time—not only in terms of what time it was, but more importantly in terms of how much time they had left.

Y2K can be framed as the linear story of a countdown; however, that is not how this dissertation recounts the event. Rather than provide a single linear narrative that proceeds year after year until that final fateful New Year's Eve is reached, this dissertation instead engages in a *Rashomon* style analysis that seeks to explore how various groups made sense of Y2K while they were experiencing it. Thus, each chapter tells the story of Y2K as it appeared to a particular broadly defined group. In terms of the overall arguments of the dissertation: chapters one and two focus on the technical reality of the crisis and the attempts to sound the alarm and perform the necessary work; chapter three emphasizes the uncertainty that surrounded Y2K at the time, alongside the attempt to calmly explain this uncertainty to the broader public; chapters four and five build upon the arguments of the preceding chapters while placing greater focus on public

media and members of the public trying to make sense of living in a world that was so dependent on computers. While "Y2K" may function as a useful umbrella term to describe a particular problem, this dissertation makes clear that those who were living through Y2K were not in universal agreement about what the problem really meant. A history of Y2K could certainly be written that would focus exclusively on the IT sector's response, or the government reactions, or media coverage, or the way that some activists and religious groups projected their apocalyptic hopes and fears onto the crisis—yet any such analysis would be woefully incomplete, for it is precisely in the variety of reactions to Y2K that the event's complexity and importance comes through. For, as this dissertation, argues: Y2K was not just a moment wherein a particular group found itself confronting the stakes of society's dependence on complex computer systems, rather Y2K was a moment when many groups found themselves confronting the stakes of society's dependence on complex computer systems. Therefore, in seeking to investigate what Y2K really was, this dissertation seeks to emphasize that making sense of Y2K, requires making sense of the different groups and individuals who were themselves trying to make sense of Y2K.

Throughout these five chapters, this dissertation engages with how Y2K represented a power struggle of sorts—wherein various individuals and groups were forced to assess their own power and authority in regards to the ways that Y2K revealed that the computer had brought about a reconfiguration of power and authority. Whether this was computer professionals becoming more fully aware of the power of computer systems and as a result their own increased power and authority due to proximity to the machine; members of Congress realizing that the might and authority of the government (and power of elected officials) was itself now reliant on the power of computer technology; or religious figures worrying that the power of computers was being used to distract from the power of God; and community activists wondering how they

could potentially claw back some local power from the overarching control of computing systems—these chapters track the ways that some groups chafed while others glided when put up against the power of computer technology.

Chapter One, "The Programmer Who Cried Wolf," focuses on the prominent Y2K commentator Peter de Jager—and this is the only chapter that is grounded in an analysis of a single individual. De Jager is one of the single most important figures in the history of Y2K, not only is he widely credited with having sounded the alarm that was actually heard—with his 1993 *Computerworld* article "Doomsday 2000"—but throughout the entirety of Y2K he was a key figure in shaping the discussions around Y2K. While de Jager's professional background in the computing world established his technical expertise, de Jager did not aim his commentary solely at his colleagues within the world of information technology. Indeed, de Jager was one of the figures whose name became somewhat synonymous with Y2K: he was regularly cited as an expert source by media reports, wrote and spoke extensively for a variety of audiences, and was one of the many figures who was brought to testify about Y2K before Congress. Yet what makes de Jager particularly notable, as the first chapter explores, is not simply that he sounded the alarm, and not only that he was fervently consistent in his basic message about the seriousness of Y2K that he delivered—but that de Jager's forecast towards Y2K shifted as time went by. Though de Jager was often mocked as a "prophet of doom," largely as a result of the at times deliberately hyperbolic tone of some of his early warnings, by mid-way through 1998 de Jager had significantly moderated his tone—shifting from "Doomsday 2000" to "Doomsday Avoided." Focusing on de Jager, this chapter charts Y2K's shift from a crisis being ignored to a problem being managed to a problem largely solved, in order to emphasize that some of those derided as "prophets of doom" were in the end prophesizing the sort of mild "bump in the road" that

actually transpired. This chapter foregrounds the argument that Y2K represented a real technical crisis, one that technical professionals were concerned about, and one which they were trying to raise the alarm regarding—while also showing how the assessments of what would happen shifted as the necessary work was done. And beyond grounding Y2K in its technical reality, this chapter also argues that the concern and uncertainty from within the technical community would provide ample material to inform the concern and uncertainty for those outside of the technical community.

Chapter Two, "The Canaries in the Code Mines," considers Y2K from the perspective of those who were most qualified to fully grasp and comment on the software problem—the professionals in the information technology community. This chapter considers the way that Y2K was presented within the IT community, how the problem was discussed and defined, and how these IT professionals strategized best practices not only for fixing the basic technical problems but also in terms of bringing these technical problems up to their supervisors in management. In this chapter, the underlying technical side of Y2K receives greater focus, considering how IT professionals sought to understand the overall scale of the problem as well as some of the strategies that were deployed within the IT community in order to fix the problem in the limited time available. Though less of a site of hyperbole than some other places within the story of Y2K, the IT community approached Y2K with a seriousness that was couched in an understanding of the sorts of problems Y2K could cause, and the way that even rather moderate problems could still turn into major headaches. As this chapter explores, Y2K was seen by many within the IT community as embodying two sets of dangers: on the one hand, these were the basic problems that could occur as a result of Y2K related failures; on the other hand, there was the danger that the IT community would suffer a major reputational loss as they were blamed for

causing the crisis in the first place. This chapter brings together a range of voices from the IT world, in order to highlight that even within the IT community expectations were varied in regards to what Y2K would ultimately bring—with some computer professionals expecting the worst even as others saw the problem as eminently fixable. This chapter furthers the argument about the technical basis of the crisis, expanding chapter one's consideration of this basis while further discussing the work that was involved in fixing the issue—while also arguing that even within the technical community there was uncertainty regarding what would transpire.

Chapter Three, "Y2K is Coming! Y2K is Coming! The Paul Reveres of Y2K," shifts attention from technical professionals to instead consider the response to Y2K from the United States Congress. Between 1996 and the early months of 2000, numerous hearings were held by various committees in the House of Representatives and the Senate that analyzed Y2K's potential impact on everything from defense capabilities to airlines to the banking sector to the postal service to nuclear power plants—and to pretty much everything that had become reliant on computer systems, which as it turned out represented pretty much everything. Resulting in numerous elected officials having to confront the extent to which not just the essential functions of government, but daily life, were now reliant on computers. These hearings brought together a range of experts, regulators, and representatives from various departments who attested to the risks surrounding Y2K—and in many cases the lack of progress being made. Yet rather than focus solely on the mountain of hearings, this chapter primarily focuses on two members of Congress: Representative Stephen Horn and Senator Robert Bennett. Representative Horn was the chair of the House's Subcommittee on Government Management, Information, and Technology—a position from which he had the honor to hold Congress's first Y2K related hearing in 1996—but what will be focused on regarding Horn are the Y2K report cards he issued

between 1996 and 1999 that sought to publicly grade the level of readiness of various parts of the federal government (and these were report cards that routinely saw Horn assigning very negative grades). On the Senate side, Senator Bennett was the chair of the Senate's Special Committee on the Year 2000 Problem, and the two major reports that Committee published in 1999 stand out as major assessments of Y2K. Horn and Bennett were two of the most prominent members of Congress working on Y2K, and this chapter considers the way that they sought to convey a certain wary watchfulness to the broader public about Y2K. This chapter shifts away from technical experts, to fully engage with this dissertation's argument around the uncertainty that surrounded Y2K, and the ways that even the ostensibly well-informed figures were still unable to make a definitive prediction as to what would happen—and the way that this wariness to make a conclusive prediction provided material that could feed into concern on the part of those looking for reassurance.

Chapter Four, "The Sky is Falling! The Sky is Falling…on this Magazine's Cover," pivots away from the technical experts and government officials to consider the way that Y2K was presented to the public in the popular press and in popular culture. Looking at the way that Y2K was covered in *Time Magazine*, *Newsweek*, *The New York Times*, *60 Minutes*, *The Simpsons*, and in the made for television *Y2K: The Movie*—this chapter considers how various outlets advanced a particular narrative of Y2K that often seemed to lean in an apocalyptic direction in order to generate hyperbolic headlines while still trying to treat Y2K with at least some level of serious concern. Rather than simply pick a few articles as representative, this chapter conveys a sense of the overall scope of much of the media coverage in order to show how the media coverage shifted as the underlying sources grew steadily more optimistic. Nevertheless, this chapter also captures many of the reasons why technical experts and

government officials frequently felt so frustrated with media coverage of Y2K which had a tendency to elevate the most alarmed voices instead of the best-informed voices. Through a close reading of how the media presented Y2K to the non-technical public, this chapter considers the ways that the media helped to cement apocalyptic imagery and warnings in the public's imagination of Y2K, even as beneath the anxiety inducing headlines there were expert voices cautioning calm. And while this coverage varied in the seriousness with which it approached Y2K, underlying much of it was a realization that Y2K truly was revealing the extent to which even the average person's daily life had become tangled up with computers. This chapter argues for Y2K's place in the history of societies confronting their reliance on technology, drawing attention to the way that even as the media coverage drew on various technical and governmental experts, that the core of much of the media coverage was informing the readers of how dependent their lives had become on computer systems.

Chapter Five, "Joseph and Cassandra—Prophesizing Doom and Prophesizing Preparation," examines the way that community groups sought to prepare for what many of them anticipated to be serious Y2K related disruptions. Much of the technical commentary on Y2K, as well as many of the government reports, were careful to distance themselves from what was widely perceived as Y2K's apocalyptic fringe (a group the media loved to report on)—and thus this chapter moves beyond the cataclysmic covers of the survival guides in order to reveal what these groups were actually saying and doing. While many of these ostensibly "fringe," reactions to Y2K were rooted in a prophetic religious stance that connected Y2K to events foreseen in the Book of Revelation, this chapter considers how Y2K was interpreted by some as proof of Biblical prophecy and examines the way that Y2K fit within a religious anxiety towards computer systems that predated Y2K. Examining the dispensationalist account of Y2K, this

chapter also considers those within these religious communities who fervently pushed back against the view that Y2K would bring about the end of days. Though Y2K apocalypticism cannot be simply ignored, this chapter further considers the groups that saw Y2K not as a divine judgement but as a human made problem that would require human beings to take preparatory steps. Thus, this chapter considers the work of the religiously inflected Joseph Project and the secular Cassandra Project, both of which took a stance that the best way to prepare for Y2K was to have communities that were ready to handle whatever disruptions might occur. Far from the caricature of paranoid survivalists stocking up on guns and fleeing to the hinterlands, groups like the Cassandra Project and Joseph Project emphasized that getting through Y2K would require taking care of each other. A similar sentiment is also explored here in the efforts by the Center for Y2K and Society, an organization which sought to get nonprofits to work seriously on Y2K—and this chapter will particularly consider the challenges that emerged as the Center sought to issue its own (publicly sourced) report cards related to the state of local readiness. Many of the activist and religious responses discussed in this chapter speak to anti-government, anti-science, and isolationist tendencies, but this chapter argues that not all of the preparedness responses were of a similarly reactionary bent—even as some of the mistrust and paranoia evinced by some of these groups and figures seems to prefigure later anti-government, anti-science, and isolationist movements. This chapter argues that these public responses to Y2K are reflective not only of an attempt to make sense of the uncertainty surrounding Y2K, but to make sense of living in a computer dependent world.

Across these five chapters I argue that Y2K is not simply a technical snafu that resulted in some minor headaches, but an event that forced a larger social reckoning with the role computers had taken on in the world by the close of the twentieth century. And while reactions to

Y2K were closely connected to a real technical issue, with serious implications if the issue went unaddressed, Y2K also functioned as the terrain upon which a larger debate about the place of computers in society played out. The groups and individuals in these five chapters, approached Y2K from different backgrounds and with different sets of goals in mind, yet all these groups were still ultimately connected as they all sought to make sense of how a programming decision made decades earlier had the potential to upend their lives. Technical professionals expressed concerns that wound up being discussed in Congressional hearings which in turn inspired community groups to fret that not enough work was being done which provided fodder for news organizations to report on people preparing for the apocalypse which in turn prompted technical professionals to emphasize that they were not actually saying that planes would fall out of the sky which…and the cycle continued, as the actions of one group prompted rebuttals and reactions by the other groups.

And while, as these chapters make clear, groups differed in their analysis of Y2K, they were united by the recognition that regardless of what Y2K would bring as 1999 became 2000 it also brought a heightened awareness of the power computers had accumulated in society.

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In its initial report on the year 2000 problem, the Senate's Special Committee stated form the outset "that the most frustrating aspect of addressing the Year 2000 (Y2K) problem is sorting fact from fiction."[150] With the committee going on to add that even when it came to "the most reputable sources" there was a tendency of "either over emphasizing a handful of Y2K

[150] U.S. Congress. Senate. Special Committee on the Year 2000 Problem. *Investigating the Impact of the Year 2000 Problem.* 1.

survivalists, or downplaying the event as a hoax designed to sell information technology equipment."[151] It is my hope that this dissertation provides a counter to the tendency, which still exists today, to treat Y2K as being about those two opposed attitudes. As the Special Committee added, "Y2K is about more than the failure of an individual's personal computer or an incorrect date in a spreadsheet"—and that is precisely what I shall explore in the following chapters.[152]

[151] Ibid.
[152] Ibid.

Chapter One: The Programmer Who Cried Wolf

Compared to many of the other books that were published on the subject of preparing for Y2K, *Countdown Y2K: Business Survival Planning for the Year 2000* featured a rather muted cover design.[153] There were no panicked people staring at computer screens, or ostriches with their heads in the sand, or apocalyptic imagery of any sort; instead, the cover simply featured the main title in large letters along with a small picture depicting a table calendar bearing the date Friday, December 31, 1999. And while the cover was noteworthy only for how decidedly non-noteworthy it was, the book featured a rather curious dedication. For the book was not dedicated to friends, family, or other loved ones—nor for that matter was it dedicated to the IT professionals working tirelessly to fix Y2K problems—no, the book was dedicated to two fabled figures who are seldom seen as admonitory. As *Countdown Y2K*'s dedication page put it: "This book is dedicated to Chicken Little, who was an optimist, and to the boy who cried wolf and never got the credit he deserved."[154] And though these dedications named fabled others, they simultaneously seemed to name one of *Countdown Y2K'*s authors.

Over the course of the year 2000 computing crisis, Peter de Jager was described in many ways. *Newsweek* called him "a Millennium Bug guru,"[155] *The Washington Post* referred to him as "one of North America's recognized leaders in the Y2K conversion arena,"[156] *The New York*

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[153] Peter de Jager and Richard Bergeon. *Countdown Y2K: Business Survival Planning for the Year 2000* (New York: Wiley Computer Publishing, 1999.
[154] Ibid, v.
[155] Steven Levy. "The 1,000 Year Glitch." *Newsweek* 127, Iss. 26 (June 24, 1996): 92.
[156] Claude J. Bauer. "Euro Conversion Follows on the Heels of Y2K." *The Washington Post.* February 8, 1998. 252-253. 252.

Times called him "Paul Revere for the year-2000 computer crisis,"[157] and *The Wall Street Journal* referred to him as "a Toronto consultant who for seven years has been trying to get businesses serious about the issue."[158] Testifying before the House of Representatives, de Jager was referred to as being amongst the "experts in government and the private sector who are working to find the most efficient means of addressing the Year 2000 software problem,"[159] and testifying before the Senate exactly two years later de Jager was praised as an authority who had "written and spoken widely" and who had "been early" in issuing "warning signals for all who would hear."[160] Amongst the ranks of community and religious activists—who could be framed fairly or unfairly as projecting their own apocalyptic anxieties onto Y2K—de Jager was hailed as "one of the early Y2K prophets" in the view of Michael Hyatt,[161] "one of the world's foremost consultants on the Y2K problem" in the words of Grant Jeffrey,[162] and Shaunti Feldhahn stated that de Jager was "widely regarded as the world's foremost expert on Y2K."[163] As for the IT community, Capers Jones referred to de Jager as a "well-known Canadian year 2000 consultant" and described him as "a good source of practical information,"[164] the prominent IT figure turned

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[157] Barnaby Feder. "The Town Crier for the Year 2000." *The New York Times*. October 11, 1998. BU2.
[158] Rodney Ho. "Many Small Business Owners Shrug at Year 2000 Problem." *The Wall Street Journal.* June 2, 1998. B2.
[159] U.S. Congress. House. Subcommittee on Technology of the Committee on Science. *Solving the Year 2000 Software Problem: Creating Blueprints for Success.* 104th Cong., 2nd sess., May 14, 1996. 1.
[160] U.S. Congress. Senate. Committee on Agriculture, Nutrition, and Forestry. *Year 2000 Compliance.* 105th Cong., 2nd sess., May 14, 1998. 5.
[161] Michael Hyatt. *The Millennium Bug: How to Survive the Coming Chaos* (New York: Broadway Books, 1998). 210.
[162] Grant Jeffrey. *Millennium Meltdown: Spiritual and Practical Strategies to Survive Y2K* (Wheaton: Tyndale House Publishers, Inc., 1998). 53.
[163] Shaunti Christine Feldhahn. *Y2K, the Millennium Bug: A Balanced Christian Response* (Sisters: Multnomah Publishers, 1998). 34.
[164] Capers Jones. *The Year 2000 Software Problem: Quantifying the Costs and Assessing the Consequences* (New York: the ACM Press, 1998). 121, 280

outspoken Y2K alarm sounder Ed Yourdon referred to de Jager as a "Year-2000 guru,"[165] and de Jager's written warnings against the belief in a Y2K silver bullet were included in Leon Kappelman's book *Year 2000 Problem: Strategies and Solutions from the Fortune 100.*[166]

While some of these descriptions frame de Jager fairly literally as a well-known Y2K consultant, opinions of de Jager were not entirely praiseworthy. While de Jager had previously spoken at a conference held by the Center for Strategic and International Studies on Y2K, at a later conference held on the same topic by the same organization the year 2000 consultant John Sarazen noted "De Jager seems to be the leading proponent of the sky is falling and we're all going to die."[167] Sarazen was hardly alone in framing de Jager as a prophet of doom, indeed de Jager was one of several figures highlighted in a *Forbes* article titled "Y2K fear merchants" wherein it was noted "It is awfully hard to believe de Jager is being wholly balanced about the scope of a problem that will net him an income stream measured in the millions over several years," and while that article featured a quote from a Y2K analyst with some appreciative comments for de Jager's efforts that same analyst stated in reference to de Jager's continued activities "But enough. Now it's time to sit down."[168] And many of the publications that had sometimes praised de Jager, quoted him as an expert source, and allowed him to write in their pages, also criticized him. *The New York Times* named de Jager alongside Paul Revere but also lumped de Jager in with a cast "of the most prominent worriers,"[169] within *The Wall Street*

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[165] Ed Yourdon and Jennifer Yourdon. *Time Bomb 2000 (Revised and Updated)* (Upper Saddle River: Prentice Hill PTR, 1999). 566.
[166] Peter de Jager "Biting the Silver Bullet." In Leon Kappelman (ed). *Year 2000 Problem: Strategies and Solutions from the Fortune 100.* (Boston: International Thomson Computer Press, 1997). 63-69.
[167] Arnaud de Borchgrave and Bradley D. Belt (co-chairs). *The Y2K Crisis: A Global Ticking Time Bomb?* Washington, D.C. June 2, 1998. *The Center for Strategic and International Studies.*
[168] Michael Noer. "Y2K Fear Merchants." *Forbes.* March 12, 1998. Online: https://www.forbes.com/1998/03/12/feat.html?sh=49232ee74238
[169] Feder. "For Worriers, Winding Down on Year 2000." BU2

Journal one commentator emphasized that de Jager "speaks and sells books on the problem" while noting "it is hard not to be a little suspicious of all the self-serving gloom and doom" and thus urging readers to make sense of Y2K hype by following the money,[170] and in a column published in the early days of the year 2000 E.J. Dionne Jr. in *The Washington Post* situated de Jager alongside "all the Y2K Cassandras, doomsters and charlatans" who went "down in flames" when the year 2000 arrived without the world turning into a blazing inferno.[171] The question of how to see de Jager was one driven home in a comment Howard Rubin provided that was supposedly meant as "advanced praise" for *Countdown Y2K*, namely: "Is Peter de Jager a Year 2000 prophet, alarmist, or simply a realist?"[172] And the answer to that question depended on who was being asked, and when they were being asked it, as was made clear in how de Jager was introduced before he spoke at a conference put on by the Center for Strategic and International Studies, at which de Jager was announced as "Dismissed at first as a Judgment Day prophet of doom and gloom, he has now convinced the most skeptical that the problem is real, ugly, costly, and a threat to our economy."[173]

It is impossible to tell the history of Y2K without discussing Peter de Jager. Certainly, there were numerous figures who were involved in the world of Y2K consulting, there were no shortage of experts whose words were quoted in the popular press and who found themselves testifying before Congressional committees, there were plenty of individuals who wrote books and articles about Y2K as they awaited the arrival of the year 2000, and there were plenty of people who embraced the affordances of the Internet in order to set up their own Y2K related

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[170] Paul Kedrosky. "To Figure Out Y2K Hype, Follow the Money." *The Wall Street Journal.* July 20, 1998. A18.
[171] E.J. Dionne Jr. "Y2K: Profits From Doom." *The Washington Post.* January 7, 2000. A23.
[172] de Jager and Bergeon. *Countdown Y2K*. i.
[173] de Borchgrave and Belt. *The Y2K Crisis: A Global Ticking Time Bomb?* June 2, 1998.

websites. Yet, de Jager remains distinct, not only because of the fact that he was routinely credited (even by his critics) with providing an essential early sounding of the alarm, and not only because his early prominence ensured that he was routinely treated as an expert by those seeking to make sense of Y2K, but because few if any figures embody the complications, challenges, and contradictions of the history of Y2K quite as well as Peter de Jager. For de Jager's work captures the trajectory of the year 2000 computer crisis: from a technological risk going largely overlooked, to a recognized problem that required attention and effort, to a problem that was mostly (if not completely) remediated by the time the deadline was reached. In looking back at Y2K, it would be easy to remember de Jager for the foreboding tenor of his early comments, or his persistent pessimism through much of the crisis—yet such a framing would overlook how openly he shifted to a more optimistic assessment once he felt comfortable concluding that the work was being done. Thus, in contrast to the apocalyptic scenarios with which Y2K is often associated, truly engaging with de Jager is a reminder that what actually took place as 1999 became 2000 was in line with what many of the experts were predicting by that point. And through it all de Jager carried himself with a certain sense of humor and an ability to recognize the absurd that provided him with critical perspective on the unfolding crisis, and on his own role in it.

Much of de Jager's prominence in the IT world was connected to his position as a writer, consultant, and commentator—but he came to all of this with IT credentials. De Jager had started his career in the IT sector in 1977 as a computer operator working for IBM, in their online

banking department.[174] Beyond IBM, de Jager's experience also involved working "for a large food chain, a computer timesharing company, a bank, clothing retailer and an insurance company" and the titles he held included "operator, programmer, business analyst, supervisor, system optimizer, systems manager and general problem solver."[175] Reminiscing about his background, de Jager framed his experience as being fairly unremarkable, as he put it, "I was once a programmer. Not a poor one. Not a great one."[176] And though the variety of positions he held provided him with a range of experiences within the computer world, he noted that during his time at IBM he "participated in the remediation of several system failures," a point to which he added the humorous observation "I was possibly even the cause of some of them."[177] These "failures" that de Jager had been involved in responding to had a host of different causes including "power outages, programming errors, operator errors, hardware failure, and smoke billowing from devices."[178] And while de Jager's commentary on the computing problems he had encountered in the past serves as a reminder that it is not particularly uncommon for computer systems to encounter problems of varying sizes, his memories of those experiences also foregrounds that when such problems arose most "were handled according to pre-established procedures" which often involved "a hastily concocted patch or kludge" to get things working again followed by a more focused attempt to truly resolve the problem.[179] In de Jager's

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[174] Peter de Jager. "How Bad, How Long, How Likely? Y2K Personal Preparation." *The Year 2000 Information Center* (http://year2000.com/archive/y2ky2khowbad.html: April 14, 1999); archived at *Wayback Machine* (https://www.web.archive.org) http://web.archive.org/web/20000229182039/http://year2000.com/archive/y2ky2khowbad.html
[175] Ibid.
[176] Peter de Jager. "Biting the Silver Bullet." *The Year 2000 Information Center* (http://www.year2000.com/archive/bullet.html: 1996); archived at *Wayback Machine* (http://web.archive.org/web/20000304120335fw_/http://www.year2000.com/archive/bullet.html)
[177] de Jager. "How Bad, How Long, How Likely? Y2K Personal Preparation." *The Year 2000 Information Center*.
[178] Ibid.
[179] Ibid.

description of his days in the computing trenches the image that emerges is one of "bleary-eyed, caffeine supported" programmers working to respond to problems in the moment—with nary the time or the resources to respond to larger problems lurking somewhere in the depths of a company's computer systems.[180] And what's more, it was an image of programmers busy working on the problems confronting their company's individual issues, not responding to issues that were simultaneously threatening computer systems worldwide.

In assessing the sorts of computer problems that he had been involved in fixing earlier in his career, de Jager emphasized that "What's important about these situations is they occur regularly, and seldom, if ever, make the 6 o'clock news." And while this may be fair description of the many small and routine bugs and bumps computer professionals encounter, in the early 1990s de Jager played a major role in elevating Y2K, an issue that, as it turned out, did wind up on the 6 o'clock news.

The Prophet of Doom

Much can be said about Peter de Jager's article on Y2K that appeared in *Computerworld* on September 6, 1993—but it is hard to argue that the title was particularly subtle: "Doomsday 2000."[181] While this article did not represent the first time that *Computerworld* had directed attention to the year 2000 computer crisis,[182] the apocalyptic framing of "Doomsday 2000" made it clear to the technical readership of *Computerworld* that this was a problem they could no longer afford to ignore.

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[180] Ibid.
[181] Peter de Jager. "Doomsday 2000." *Computerworld* 27, No. 36 (September 6, 1993): 105, 108-109.
[182] Paul Gillin. "The problem you may not know you have." *Computerworld* 18, No. 7 (February 13, 1984): 7-8.

Though the title of the article invoked "doomsday," near the article's outset de Jager drew a comparison to a less apocalyptic if nevertheless still severe scenario, writing: "The information systems community is heading toward an event more devastating that a car crash."[183] Noting that this "crash" was related to the date format that presented the year with only two digits, de Jager highlighted that "our information systems" were reliant on this two digit "faulty standard" which would now "cost the worldwide computer community billions of dollars in programming effort."[184] If the foreboding title, and the evocation of a car crash had been insufficient to make readers pay attention, the mention of costs running into the billions was certain to make more readers sit up a bit straighter. Speaking directly to a readership of individuals in and around the IT community, the article was appearing in *Computerworld* after all, de Jager looked beyond the immediate contours of the technical problem to warn the IT community "we are going to suffer a credibility crisis," which he expanded upon to say, "We and our computers were supposed to make life easier; this was our promise. What we have delivered is a catastrophe."[185]

At the time of publication, 2,308 days remained until the date change to the year 2000, but de Jager highlighted that no one should be reassured by that amount of time, if anything "With less than seven years to go, someone is going to be working overtime."[186] After providing a quick summary of the problem and drawing attention to its alarming scale, de Jager noted that for IT professionals the ordeal that lay before them was "to identify and correct all the date data

[183] Peter de Jager. "Doomsday 2000." 105.
[184] Ibid.
[185] Ibid.
[186] Ibid, 108.

and check the integrity of all calculations involving date information."[187] It was a problem that would result in costs ranging from "about $50 million to $100 million for each company" and de Jager was almost certainly anticipating the reactions of many of his readers when he noted "The mind boggles at a maintenance problem with that price tag."[188] Though careful not to place all of the blame on the IT profession, de Jager nevertheless argued that responsibility for this issue would rest with them, and he treated the computing communities lack of interest in responding to the challenge as "the real problem" as "It is very difficult for us to acknowledge that we made a 'little' error that will cost companies millions of dollars."[189] Drawing on Gerald Weinberg, the author of *Quality Software Management*, de Jager quoted him as saying "We in the IS industry have not been paying our way…We have been building up a 'national debt' just as surely as the U.S. has been building up a money debt."[190] This was a debt that had been slowly accumulating for decades, ever since computer programmers had made the initial choice—albeit in response to pressure from management—to truncate dates, and while the paying off of this debt had been delayed and delayed by subsequent generations of programmers, those working in the 1990s were the ones who would now be stuck paying for it. This problem could not be ignored or put off, and de Jager pulled no punches in declaring "We must start addressing the problem today or there won't be enough time to solve it."[191] Granted, it wasn't entirely doom and gloom, and though de Jager quoted one individual already working on Y2K as saying "I feel like a lone voice crying in the wilderness," his piece made clear that there were several voices building into

[187] Ibid.
[188] Ibid.
[189] Ibid.
[190] Ibid.
[191] Ibid.

a chorus, and that they were starting to be heard.[192] De Jager pointed out that there were already a handful of companies "unveiling testing and inventory tools" that could potentially make the work a bit more doable (and the article featured a column listing some of those tools), while in a comment with which he could be talking about himself de Jager noted that some "are hoping that bombarding people with information is the best remedy."[193] Closing out "Doomsday 2000," de Jager observed that "the next seven years will be filled with dire predictions," but he then chose to give the final words to the publisher of *Software Maintenance News*, Nicholas Zvegintzov, who commented "You are going to become very, very tired of millennium moaners telling you that your software will fail as it enters the new millennium…But be patient with them. There really is something to be said for them."[194]

While "Doomsday 2000" was not a particularly long or detailed article it was nevertheless credited by many as being the match that lit the fire under the IT sector. And though the article made clear that de Jager was not the only one thinking about Y2K at that point, the article widened the ranks of those recognizing the reality of the problem. In his *New York Times* profile of de Jager, Barnaby Feder notes that "Doomsday 2000" was "widely considered as the information-age equivalent of the midnight ride of Paul Revere: the alarm that stirred the industry into taking the year 2000 menace seriously."[195] In a timeline of "The History and the Hype" accompanying its cover story on Y2K, *Time Magazine* described "Doomsday 2000" as "seminal" and credited the "alarmist language" of de Jager's warning as helping "Y2K

[192] Ibid.
[193] Ibid, 109.
[194] Ibid.
[195] Feder. "For Worriers, Winding Down on Year 2000." BU2

awareness" reach "a kind of critical mass."[196] Similarly, *The Washington Post* noted that "De Jager wrote one of the first articles in Computerworld in the fall of 1993, about the year 2000 dilemma," referencing "Doomsday 2000" and the earliness with which it appeared as a way of staking out de Jager's qualifications on the subject and highlighting that he was not someone who had come along and hopped on the bandwagon—he was the one who had started dragging that bandwagon down the road.[197] And in the very piece where the Y2K analyst Tom Oleson had said of de Jager that it was time for him "to sit down," Oleson had first noted that "de Jager really did us a service back in 1993 by calling our attention to this and saying, 'Hey, this is a big deal.'"[198]

For his part, de Jager seemed quite aware of the importance of "Doomsday 2000," and included an annotated version of it as the preface to *Countdown 2000*.[199] There de Jager acknowledged that his 1993 *Computerworld* article "is considered by many as being the opening salvo in the battle against 00."[200] Nevertheless, de Jager's comments looking back from 1999 were certainly shaded by the decidedly more optimistic stance towards Y2K that he had taken by that point. Reflecting on "Doomsday 2000," de Jager gave credit (or blame) for the title to the editor, calling the hyperbolic framing "admittedly overstated" while noting that "doomsday" still seemed the appropriate "word to describe the potential consequences of failure to address it in time" while acknowledging that for a time "anyone who spoke of this problem was described as

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[196] Chris Taylor. "The History and the Hype." *Time Magazine.* January 18, 1999: 72-73. 73.
[197] Linton Weeks. "We Have a Problem" *The Washington Post.* April 8, 1999. C4.
[198] Michael Noer. "Y2K Fear Merchants." *Forbes.* (https://www.forbes.com/1998/03/12/feat.html?sh=49232ee74238: March 12, 1998).
[199] It should be noted that *Countdown 2000* is itself an expanded and updated version of an earlier book that de Jager and Bergeon had written about Y2K. The earlier book had been titled *Managing 00: Surviving the Year 2000 Computing Crisis* (New York: Wiley Computer Publishing, 1997). A careful review of both books shows that most of *Managing 00*'s content appears unaltered in *Countdown 2000*.
[200] de Jager and Bergeon. *Countdown Y2K*. xxi.

a doomsayer."[201] In reassessing the article, de Jager largely stood by the claims he had made in 1993, while noting that the situation in 1999 was not the same as it had been in 1993. De Jager was still framing Y2K as "the biggest blunder made by any technology," though he made clear that the problem of "procrastination" was really one that rested with people not machines.[202] One significant shift in perspective that de Jager made in revisiting the article was to try to more broadly share the responsibility between the IT industry and management—which "has never really understood technology"—and which was the source of the financial pressure that first led to dates being truncated.[203] In some areas of the article de Jager recognized that some of his estimates, around things such as costs, had actually proven to be rather low estimates, though there he had been relying on the widely accepted cost estimates of that time.[204] By 1999 de Jager was well aware of the way that his attempts to sound the alarm had often seen him cast as a prophet of doom, and he understood "People are indeed tired of the alarm bells," yet he maintained that "the millennium moaners were right. There is a problem."[205] Granted, to the extent that de Jager may have been lumping himself into the ranks of "the millennium moaners" his earning of such an affiliation could not be solely blamed on "Doomsday 2000."

Case in point, de Jager's testimony delivered before the Subcommittee on Technology of the Committee on Science in the House of Representatives, for which he titled his statement "Unjustified Optimism."[206] These comments, were not delivered at the first Y2K hearing that Congress held; however, they were delivered at the second Y2K hearing that Congress held. De

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[201] Ibid.
[202] Ibid, xxii.
[203] Ibid, xxii-xxiii.
[204] Ibid, xxv.
[205] Ibid, xxvi.
[206] U.S. Congress. House. Subcommittee on Technology of the Committee on Science. *Solving the Year 2000 Software Problem: Creating Blueprints for Success*. 3-6.

Jager began his testimony by describing "Computer practitioners" as being "the most optimistic people in the world," though the title of his comments made it clear that he did not feel such optimism was warranted in the case of Y2K.[207] While placing Y2K within the broader history of IT development and maintenance, de Jager told the committee that "This project is unique" and attributed this uniqueness to several factors, namely: that Y2K featured a "deadline" that "cannot be missed," that this was "an immovable deadline," and that "this deadline bears no relationship to the size of the task."[208] Warning the committee that they would doubtlessly hear from numerous people who would assure them that their projects were on track and that the work would be completed on time, de Jager characterized this as "nothing more than unjustified optimism" and asked the committee to seriously consider "the industry track record of delivering projects on time."[209] The picture that de Jager painted was a gloomy one, characterized by too much work, not enough time, a shortage of skilled workers, an industry that had a miserable track record when it came to delivering projects on time and on budget, and as if all of that was not bad enough in and of itself, de Jager highlighted that most companies had at that point not even entered into the basic planning stage. Though de Jager did not specifically call for pessimism, he did state "We have no time for unjustified optimism nor have we time for cautious optimism" arguing that these needed to be replaced "with determined urgency."[210]

Despite the general foreboding air surrounding these comments, de Jager was emphatically not suggesting that people should throw up their hands, stock up on guns, and head for bunkers in the hinterlands. When Representative Constance Morella, the subcommittee's

[207] Ibid, 3.
[208] Ibid.
[209] Ibid, 4.
[210] Ibid.

chair, asked de Jager if there was perhaps "a tendency sometimes to exaggerate the problem?" de Jager stood his ground, stating "We cannot exaggerate this problem beyond the reality" with that basic reality being that if a company or institution was reliant on a program, if that "program dies…your organization stops."[211] Yet, de Jager's message was not a hopeless one, he credited "the heroic efforts" already underway by the Social Security Administration, but added "They are not getting support from their government."[212] Recognizing that the problem was not just one of government computers and that the government was understandably hesitant to be seen as telling private enterprises how to manage their IT departments (and IT budgets), de Jager still noted that "some government direction" would be helpful.[213] As de Jager emphasized, "There is no way to wave this one away," and he made it clear "there is no silver bullet."[214] Yet, de Jager was not dismissive of the work that was being done, noting that a decent percentage of banks and insurance companies "are actively solving this thing," though he had a rather darker assessment of the level of readiness from utility companies and the government.[215] Testifying in 1996, three years after "Doomsday 2000," but at a point when serious attention to Y2K was still limited, de Jager lamented the lack of attention the issue was receiving and that to the extent the press was covering it they tended to frame it as "Mad Computer Scientist Predicts the End of the World in the New Millennium."[216] And to make it clear that he was not truly predicting doomsday, de Jager noted "Anybody who is working on this will ultimately muddle through. They will perform triage. They will do the absolute necessary things that they have to do to do business on a day-to-

[211] Ibid, 10.
[212] Ibid.
[213] Ibid, 13.
[214] Ibid, 14.
[215] Ibid, 15.
[216] Ibid.

day basis," and given that it was "a worldwide problem" de Jager suggested that the US taking "a real strong stance" would inspire other countries to do the same.[217]

De Jager had sounded the tocsin, even if that sounded to some more like the trumpets out of Revelation—but de Jager was not satisfied to have let out the warning cry, he was also committed to ensuring that people understood exactly what he was warning about.

The Alarm Sounder

Many terms were used to describe de Jager over the course of the year 2000 software crisis, but perhaps the most accurate (if seldom actually used) descriptor would be "prolific." Indeed, over the course of the 1990s, de Jager was routinely speaking and writing about Y2K to a wide range of audiences, including: technical professionals, members of the government, industry groups, the broad public, and the mixed audience that visited the website for his Year 2000 Information Center (www.year2000.com) in order to keep up with his humorous yet pointed commentary. While de Jager was a skilled writer who knew how to properly present an argument to different audiences, for the bulk of the 1990s he continually hammered home the same basic five points—three of which he consistently laid out to provide a condensed explanation of the problem. And through it all, de Jager tried to carefully situate himself between those predicting the apocalypse and those predicting nothing at all, as he put it in the pages of *Scientific American* "At one end of the spectrum lies extreme silliness…At the other end is ill-

[217] Ibid, 16.

informed complacency."[218] De Jager highlighted "society's ability to recover from adversity" but also warned that "pooh-poohing Y2K ignores the technological vulnerability of modern society."[219]

The core points that de Jager consistently returned to for the sake of explaining "the problem in a nutshell" were threefold, though quite straightforward. These consisted of: first, "The computer applications upon which we depend are broken;" second, "The deadline—January 1st, 2000—is fixed and unavoidable;" and third, "The computer industry has a poor reputation for delivering systems on time."[220] That exact description of the three problems appeared in a piece that de Jager posted to his website, but these three points were repeated by him, albeit with slight linguistic variations, over and over. Thus, writing in *The Wall Street Journal*, de Jager stated "The Code Is Broken" before adding "we are faced with an immovable deadline," and then added "The IT industry has proven itself incapable, time and time again, of delivering projects on time with a high degree of confidence."[221] And testifying before the Senate, de Jager once more stated: "Our systems, not all of them, but most of them, are broken," followed by noting "The deadline is fixed and cannot be missed," and rounded this out by adding "The computer industry is not known for reliable, on-time delivery of systems."[222] Lest it seem that de Jager only made these three points when addressing an interested, if non-specialist audience, de Jager also made roughly the same points when speaking to his colleagues in the IT world. Speaking as part of a panel at a conference on software maintenance, de Jager did not

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[218] Peter de Jager. "Y2K: So Many Bugs…So Little Time." *Scientific American* 280, No. 1 (January 1999): 88-93. 93.
[219] Ibid.
[220] Peter de Jager. "It's a People Problem." *The Year 2000 Information Center* (http://www.year2000.com/y2kpeople.html: 1998); archived at *Wayback Machine* (http://web.archive.org/web/20000305092107/http://www.year2000.com/y2kpeople.html).
[221] Peter de Jager. "Around the World in 00 Days." *Wall Street Journal.* July 14, 1998. A17.
[222] U.S. Congress. Senate. Committee on Agriculture, Nutrition, and Forestry. *Year 2000 Compliance*. 5-6.

bother describing the code as broken, but framed Y2K as "unique because it's an immovable deadline" and wondered "why are we all acting out the same project management behaviors that have historically led to project failures and missed deadlines" he reminded his peers in the software maintenance world "In the past we handled projects like 100 mile marathon relay races…and dropped the baton at every opportunity."[223]

With these three points de Jager established the essential outlines of the crisis in a way that sought to make it legible to those outside of the IT sphere, while simultaneously providing a barbed reminder to those within the IT sphere about the dimensions of the problem. The reference to "broken" code captured the basic kernel of the Y2K issue, the fact that dates had been written using two digits rather than four for representing years—and by repeatedly framing this as a matter of something that was "broken" de Jager was therefore able to seamlessly point to the need for this to be fixed. In supporting his first claim, de Jager's response seemed to boil down to a plea to simply look around at what companies and institutions were doing, as he argued "We are drowning in proof of this statement" about the "broken" systems, with him citing the number of companies working furiously on the problem as evidence that clearly something was wrong.[224] With his second point, de Jager emphasized the thing about Y2K that made it such a special situation. After all, in much of his writing, de Jager foregrounded a less than flattering image of the IT sector that portrayed them less as savvy high tech geniuses, and more as caffeinated amateur firefighters dashing around putting out blazes (some of which they had themselves accidentally lit). Yet, if a certain quantity of technological glitches and snafus were a

[223] Shawn Bohner, Thomas Backman, Elliot Chikofsky, Peter de Jager, and Nicholas Zvegintzov. "Examining Year 2000 Date Challenges from the Maintenance Perspective." *1996 Proceedings of International Conference on Software Maintenance* (November 4-8, 1996): 125-128. Pg. 127. Note: the "…" appears in the original text.
[224] U.S. Congress. Senate. Committee on Agriculture, Nutrition, and Forestry. *Year 2000 Compliance*. 5.

fairly standard part of the realities of IT work, Y2K stood apart as it had a particular date attached to it. De Jager routinely drew attention to the problems and issues that various companies and institutions were already encountering in the years preceding the start of the year 2000, but the point that de Jager kept coming back to was that there was a hard deadline for Y2K, and it was a deadline that could not be moved. While the first two points were of the sort that were fairly standard within many discussions around Y2K within and without the IT sector, it was with his third point that de Jager provided a truly disconcerting notification, and one which emphasized that he was not merely someone speaking out about Y2K, he was a veteran of the IT world speaking out about Y2K. And considering that the third point noted that the IT sector had a lousy track record of finishing projects on time, it served to make points one and two seem much more dire. For this third point, de Jager recounted a common experience he had when speaking to IT audiences: when he would ask for a show of hands of those in attendance with "a high degree of confidence in your ability to deliver the Y2K project on time?" the result would be "A forest of hands raised in affirmation," but then when he would ask the same audience "Over the past three years, raise your hands if you have delivered 100% of your applications on time" this second question would be met with "A gale of laughter."[225] As de Jager put it in concluding his comments delivered before the Bank for International Settlements in Basle, Switzerland: "The code is broken. The deadline is fixed. We're not good at meeting deadlines."[226]

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[225] Peter de Jager. "EMU and the Gamble." *The Year 2000 Information Center* (http://www.year2000.com/y2kgamble.html: 1998); archived at *Wayback Machine* (http://web.archive.org/web/20000303153447/http://www.year2000.com/y2kgamble.html).
[226] Peter de Jager. "Statement before Bank of International Settlements. Basle, Switzerland." *The Year 2000 Information Center* (http://www.year2000.com/y2kbasle.html: April 8, 1998); archived at *Wayback Machine* (http://web.archive.org/web/20000302050538/http://www.year2000.com/y2kbasle.html).

Though it was not named alongside de Jager's oft repeated three points, there was another core feature of his assessment that served as something of an umbrella hanging over all three, and this was de Jager's insistence that there was no, and there would be no, silver bullet. On the one hand, this was convenient as Y2K was not a werewolf; on the other hand, this was very inconvenient seeing as Y2K was still a monster that was very difficult to slay. In his column in the computer magazine *Datamation*, de Jager referred to the tendency amongst "technical people who should know better but haven't really explored the complex intricacies of the problem" to reply to it with some version of "I can write a program to fix it!"[227] De Jager sympathized with the desire for such a solution, as the successful forging of such a weapon would "remove this burden from our shoulder and redeem ourselves in the eyes of the world."[228] After all, even if the search for the silver bullet entailed a recognition that the "code is broken," the creation of that bullet would provide an easy way of getting around the unmovable deadline and the tendency for the IT sector to not finish its project on time. While taking a stance that any such tool would really just be "a flash of hype," de Jager attempted to define such a tool as one "that in three months or less can solve the Year 2000 problem for someone who has not yet addressed it in any fashion."[229] And though de Jager was very cognizant of the fact that there were a variety of tools available that could make the process of remediating Y2K issues more doable, and he had even noted as much in "Doomsday 2000," he was very skeptical of the promise that any single tool could magically solve all of the problems. Certainly, de Jager was also aware of how bad it would look should he begin shilling for a certain tool, or accepting direct compensation to champion a particular tool, though he still recognized that there were

[227] Peter de Jager. "The Silver Bullet Solution." *Datamation* 43, Iss. 5 (May 1997): 33.
[228] Ibid.
[229] Ibid.

many tools that could "reduce the workload from 20 to 30 percent depending on the specifics of our year 2000 problem."[230]

With his criticism towards the hope for a messianic silver bullet, de Jager provided a much deeper analysis of the point that was otherwise quickly captured under the heading "the code is broken," here more fully explaining how the code was broken and why it would be so difficult to fix it. And there wasn't just a single reason why the search for the silver bullet was, as de Jager put it in his contribution to Leon Kappelman's *Year 2000 Computer Problem: Strategies and Solutions from the Fortune 100* "pure, utter nonsense," instead there were more than a dozen barriers the silver bullet would have to pierce.[231] These challenges for any proposed silver bullet included that "Most companies do not have a companywide date standard," that a technical solution would still "involve staff training," that solutions like windowing and context changes that many companies were already introducing had further muddled the situation, that many programmers were themselves "totally flummoxed by a section of code" (so how could silver bullet software make sense of it), that there were so many different languages of code in use (even within a single company's systems) as to make it absurd to think of a single tool that could sift through them all (especially seeing as some of those languages might have been custom/unique to a particular company), and the fact that "no matter how wonderful the silver bullet is—you are *still* left with the task of testing all your code" with this testing step being an important and time consuming one.[232] Pretty much from the start of de Jager's time commenting on Y2K he had found himself being the bearer of news that many did not want to hear, and when

[230] Peter de Jager. "Biting the Silver Bullet." in Leon Kappelman (ed). *Year 2000 Problem: Strategies and Solutions from the Fortune 100.* Boston: International Thomson Computer Press, 1997: 63-69. 64.
[231] Ibid, 63
[232] Ibid.

it came to shooting down the silver bullet, de Jager was once more in that role. And yet, when it came to pushing back against the belief in silver bullets, de Jager was also motivated by a sense that the search for the silver bullet was a dangerous distraction that would prevent needed work, noting "People who hear a silver bullet exists will think they can now put this problem off until later."[233]

De Jager's three main points, as well as his comments on silver bullets, became something of a leitmotif playing throughout much of de Jager's work on Y2K. And yet even as de Jager seemed to be quite aware of the fact that he had secured himself a fairly significant soapbox from which to speak, he also seemed to be quite aware that it was not sufficient for these words of warning to just be coming from him—even if he was sometimes afforded the opportunity to speak these words in serious publications or before prominent individuals. From fairly early on, de Jager had been aware of the importance of bringing additional attention to Y2K, and in one installment of his *Datamation* column he had exhorted his readers to "Take a reporter to lunch and describe the problem."[234] As he saw it, Y2K had the "classic hooks journalists look for-disaster and money."[235] And while de Jager would wind up frequently lamenting the tendency of journalists to focus too heavily on the disaster and money sides of the problem, he still recognized that the attention of journalists was needed to help solidify the stature of the problem, it was "all very nice for the technical magazines, like *Datamation*, to finally start giving the issue some respect and some coverage," but de Jager knew that Y2K could not just remain a topic of concern only within the IT community. The desire for someone with significantly more cultural clout to carry the torch was captured in de Jager's open letter to

[233] Ibid.
[234] Peter de Jager. "Take a Reporter to Lunch." *Datamation* 42, Iss. 1 (January 1, 1996): 76.
[235] Ibid.

Bill Gates, in which he spoke to Gates as a fellow IT professional and said "You and I both know we live in the 'Age of Computers'…computers affect more aspects of society than most people realize."[236] Addressing Gates, de Jager warned that many people "expect a silver bullet" and to this he added "they expect you, Bill Gates, to deliver it."[237] De Jager was careful not to blame Gates for the crisis, and did not suggest that he had any responsibility "that extends beyond your own products," but he presented Y2K as an opportunity for Gates to take a role of leadership, asking him to simply come forward and state "No silver bullet is possible" and "All Companies are at serious risk and must solve this Year 2000 problem in time."[238] A little more than a year later, de Jager addressed another open letter to President Clinton, asking Clinton to directly play a greater role in responding to some of the worrisome reports being issued by Representative Horn—with 13 months left, de Jager was telling Clinton "the ball is in your court today, do something with it."[239] And when testifying before the Senate, de Jager had similarly hoped that President Clinton and Bill Gates would be more outspoken on the issue—though at that hearing, de Jager also suggested it seemed somewhat odd that the "fellow here who has assigned himself as the technological leader of America—Al Gore" had not said "one word…on this subject."[240]

Luckily for de Jager, many of his hopes did at least partially come true—if often in ways that were not quite in line with his exact desires. For the media really did start to pay attention to Y2K—often quoting de Jager as one of their sources—and President Clinton did make a handful of comments directly relating to Y2K. Nevertheless, as the public profile of Y2K grew (thanks in

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[236] Peter de Jager. "Dear Mr. Gates." *Datamation* 43, Iss. 8 (August 1997): 27.
[237] Ibid.
[238] Ibid.
[239] Peter de. Jager. "Open Letter to President Clinton." *The Year 2000 Information Center* (http://www.year2000.com/y2ky2kclinton.html: November 17, 1998); archived at *Wayback Machine* (http://web.archive.org/web/20000304125533/http://www.year2000.com/y2ky2kclinton.html)
[240] U.S. Congress. Senate. Committee on Agriculture, Nutrition, and Forestry. *Year 2000 Compliance.*. 9-10.

no small part) to de Jager he often found himself butting heads to a greater or lesser extent with other figures in the IT world, who may have appreciated de Jager's work in sounding the alarm, but who also seemed to somewhat resent how he kept reminding people of their industry's habit of not getting the work done on time. Though even as de Jager remained skeptical of the track record of IT projects, he also highlighted the role of companies offering Y2K assistance—indeed "so many companies…entered the year 2000 market during calendar years 1996 and 1997" that "a new stock index" was "created based on companies selected by" de Jager,[241] and de Jager and Bergeon's book included a lengthy appendix of Year 2000 vendors.[242] De Jager defended his positions, as was made clear at a conference held by the Center for Strategic and International Studies at which de Jager was a speaker alongside other prominent commentators on Y2K—including Senator Robert Bennett, chair of the Senate's Special Committee on the Year 2000 Technology Problem.[243] In his comments de Jager restated his three core points—"the code is broken…it's a deadline…IT projects are delivered late or never"—and evocatively warned "We are headed for the first turn in the road in this information highway, and we forgot to put in a steering wheel."[244] De Jager's comments at the CSIS event featured all of his other hits, as he also wondered why Gore had remained so silent, and expressed frustration with Bill Gates's refusal to take a leadership role—expressing particular chagrin that Gates had originally claimed "it isn't a problem" and that "his products weren't affected" comments that he had rolled back as

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[241] Capers Jones. *The Year 2000 Software Problem: Quantifying the Costs and Assessing the Consequences.* New York: the ACM Press, 1998. 121.
[242] de Jager and Bergeon. *Countdown Y2K*. 257-297. A note at the beginning of the appendix (page 257) states "The following list of vendors contains only established firms with proven product and service offerings. Their appearance on the list is in response to an invitation by the authors. The authors make no expressed or implied warranties for these companies or their products."
[243] Borchgrave and Belt. *The Y2K Crisis: A Global Ticking Time Bomb?* The Center for Strategic and International Studies.
[244] Ibid.

"Now he admits they are."[245] And though de Jager's views were largely in sync with other speakers at the event, there were a few heated moments, such as when Howard Rubin (responding to a comment from Ed Yardeni, not de Jager) noted "don't fool yourselves that every company is sort of ignoring this thing" with Rubin adding that "of the Fortune 500 types…we know that two-thirds of them have strong programs in place."[246] Rubin was hardly denying the reality or the scale of the problem, but he offered some pushback on de Jager's assessment, emphasizing "the comment I want to make is that the generalizations that everybody is screwed up and is not handling it isn't the case."[247]

Rubin's retort to de Jager highlights the fifth element of de Jager's commentary, a point that was easy to overlook in his earlier warnings, but which became increasingly relevant as 1998 began to turn into 1999. Namely, that even as de Jager expressed frustration at the slow pace of work, he was nevertheless quite aware that the work was being done, and that if the work was being done catastrophe could be averted.

The Prophet of Not-Doom

In the final paragraph of his article in *Scientific American*, de Jager was fairly direct in laying out his prediction for what would actually happen when 1999 became 2000. Earlier in the article he had made a point to criticize "both extremes" when it came to the predictions—those anticipating the apocalypse and those shrugging their shoulders at what they imagined would be nothing at all. While "considering" the various relevant factors, "including the amount of work

[245] Ibid.
[246] Ibid.
[247] Ibid.

already completed and the planned contingencies," de Jager stated "I believe that severe disruptions will occur and that they will last perhaps about a month."[248] And to this he added the prediction that "Additional problems, ranging from annoyances to more serious issues, will continue cropping up throughout 2000."[249] Though the reference to "severe disruptions" does not seem particularly hopeful, de Jager noted that his outlook "might be optimistic" seeing as "it assumes that people will have done what is necessary to minimize the number of single point of failure that could occur," and he described even that amount of work being done as representing "a Herculean effort unprecedented in the history of computers."[250]

It may seem that there is not particularly much difference between "the event more devastating that a car crash" that de Jager had spoken of in "Doomsday 2000" and the "severe disruptions" that he was evoking in *Scientific American.* Yet a great deal in de Jager's outlook truly had changed between 1993 and 1999, and much of that change did entail a shifting perspective on what would ultimately occur. Indeed, compared to some of his other comments in the latter half of 1998, and certainly many of his comments in 1999, de Jager's prediction of "severe disruptions" stands out as one of his more dire assessments—though it is worth emphasizing that de Jager believed the "severe disruptions" would not last particularly long, and that making a prediction of that sort at the start of 1999 placed de Jager squarely in the mainstream of predictions at that time.[251] Importantly, de Jager's allusion to "severe disruptions"

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[248] de Jager. "Y2K: So Many Bugs…So Little Time." *Scientific American.* 93.
[249] Ibid.
[250] Ibid.
[251] Note: Chapter 2 of this dissertation provides more details on other figures within the IT industry's predictions, and de Jager's predictions place him in line with the majority opinion from the WDCY2K (for more on this see chapter 2); and, as is explored in Chapter 3, de Jager's prediction was largely in line with the conclusions of the initial report from the Senate's Special Committee on the Year 2000 (by the time that committee offered it's 100 Day Report, it's assessment had lightened—but as the end of 1999 drew closer, de Jager's assessment also lightened).

would not be his final word on the topic—for at the core of his assessment was a recognition that a great amount of work had been done, and that a great deal of work was still being done. Over the course of the year 2000 software crisis, de Jager demonstrated an impressive level of consistency in his overall outlook—as shown by the previously discussed core points he routinely repeated—and yet this rigidity in his assessment of the problem did not translate to an unwillingness to change his final assessment of what would happen as the situation changed. Indeed, it had not been so much that de Jager had been consistent in stating exactly what would happen, but that de Jager had been consistent in arguing that based on the reality of the problem, as he put in the *Wall Street Journal*, "When you get right down to it, companies will spend whatever it takes to get them through this painful transition."[252]

At times de Jager chafed at being referred to as a doomsayer, and at other times he seemed to playfully embrace the title, yet it often seemed that the label he rejected the most vehemently was that of defeatist. Whether in "Doomsday 2000" or in some of his early columns in *Datamation*, de Jager emphasized the importance of raising awareness with a recognition that in an atmosphere of apathy sometimes those who were dismissed as "scaremongers" often wound up serving "a useful purpose" even if their reward would just be some variation of "shooting the messenger."[253] While de Jager had never taken a stance that all was lost and people should take all of their money out of the banks, stock up on survivalist gear, and flee to isolated cabins off the grid—in the second half of 1998, he began to grow increasingly exasperated with those who were acting as if catastrophe was unavoidable. This frustration played out especially visibly in the pieces that de Jager published on his website in the last eighteen months before the

[252] Peter de Jager. "Year 2000: Dollar by Dollar." *Wall Street Journal.* April 27, 1998: B-13-B-16. B-15.
[253] Peter de Jager. "Entering the Black Zone." *Datamation* 44, Iss. 1 (December 1997): 39.

arrival of the year 2000, as de Jager expressed amazement "that we went from denial to despair with a nary a stop between."[254] In denouncing those giving up, de Jager emphasized "I've been at this battle longer than most and my message has always been the same. The code is broken, let's fix it."[255] Though, he had generally spoken the "broken" part quite loudly while pointing to the many challenges that would get in the way of the attempt to "fix it." Nevertheless, de Jager seemed quite aware that his pivot was confusing and displeasing some, and he recognized that the names being bestowed on him were changing, even if his ultimate message had not, as he noted "In the beginning I was described as a doomsayer…today I'm seen as a moderate. Amazingly, by some, I'm now even described as a Pollyanna!"[256]

Commentary on Y2K, not just from de Jager, had a tendency to regularly reference the impending deadline and the ever dwindling amount of time that remained before that deadline was reached—yet even as he pointed to that deadline, de Jager also reminded his audience "it's not January 1st 2000, it's today."[257] De Jager had consistently suggested that some amount of triage would be necessary, and that contingency plans would need to be in place should things actually go wrong, and though he answered his own question of "Will we fix everything?" with "Of course not" he also state clearly "But I honestly believe the mission critical stuff will get done. And where it doesn't get done, work arounds can, and will, be found."[258] The picture of the IT community that de Jager usually drew was not the most flattering image of his fellow programmers, but he still defended their basic competence. And even as de Jager stood his

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[254] Peter de Jager. "You're Sick of the Game! Well, now, that's a Shame." *The Year 2000 Information Center* (http://www.year2000.com/y2kgame.html: August 5, 1998); archived at *Wayback Machine* (http://web.archive.org/web/20000303181757/http://www.year2000.com/y2kgame.html)
[255] Ibid.
[256] Ibid.
[257] Ibid.
[258] Ibid.

ground regarding his core assessment, he also admitted that there was a fair amount of uncertainty surrounding what would actually break, as he noted "Nobody, but nobody, knows how this one will shake out. Let's at least try to fix it, before we give up."[259]

Where once de Jager had found himself having to battle against complacency, as Y2K entered its final stretch de Jager found himself having to battle against defeatism, a particularly challenging task as he still sought to maintain the position that a lot of work still needed to be done. To the extent that de Jager knew that some were accusing him of changing his stance, he responded that there was nothing shameful about changing your position once the underlying evidence began to shift as well, de Jager had spent quite some time skeptical of the "ability to heed the clanging of an alarm bell" but by September of 1998 he was stating "I am now of the opinion that despite our late start, we will get through this. Not with ease. Not without tremendous pain, but we will get through this, it's not all going down the toilet."[260] And "tremendous pain" seemed not to refer to impending collapse but to the Olympian effort that was still required. At long last, de Jager felt Y2K was truly being treated as a priority, that governments "are finally getting it" and that "we are now doing what we can do at this late date."[261] De Jager's optimistic turn was still hedged by a recognition that there was only limited time remaining, and he still predicted that there would be some "business failures directly related to Y2K" and likely "at the very least, a recession" but he also stated clearly "Planes will not fall out of the sky" and expressed confidence in the status of the financial industry.[262] Though de Jager's name was inextricably bound up with the word "doomsday," he emphasize that "worst

[259] Ibid.
[260] Peter de Jager. "How time flies when you're having fun…" *The Year 2000 Information Center* (http://www.year2000.com/y2ktimeflies.html: September 1998); archived at *Wayback Machine* (*http://web.archive.org/web/20000416140821/http://www.year2000.com/y2ktimeflies.html*).
[261] Ibid.
[262] Ibid.

case" scenarios were those "created by total, inaction, total ignorance, total denial" and as he put it clearly "that's not our current situation."[263] And what's more, once the "worst case" scenarios could be safely eliminated, it opened up the space in which even the moderately bad scenarios could also start to be chipped away.

Testifying before the House in 1996, de Jager had argued that the real deadline to pay attention to was not so much December 31st, 1999 but December 31st, 1998—for a key part of the remediation efforts would be extensive testing of all of the fixes, work which would itself require a significant amount of time.[264] And as the 1998 deadline drew closer and closer, de Jager was able to make better informed assessments, and though what he saw did not alleviate all of his concerns, neither did the evidence reinforce his earliest worries. He praised the efforts of the financial sector, and the willingness that many financial firms had shown to share best practices with one another, and he justified his "cautious optimism" by pointing not to fantasies about what the financial sector was hoping to get done, but by recognizing what the Financial sector had "already accomplished."[265] Furthermore, the financial sector wasn't the only sector that had much cause for some justified applause. For years companies and institutions had been making all sorts of promises about what they would accomplish, and when they would accomplish it by, and as 1998 came to a close de Jager was calling on companies to share their good news.[266] De Jager recognized that at many firms, the legal departments were trying to

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[263] Ibid.
[264] U.S. Congress. House. Subcommittee on Technology of the Committee on Science. *Solving the Year 2000 Software Problem: Creating Blueprints for Success*. 4.
[265] Peter de Jager. "Financial Community Leads the Y2K Race." *The Year 2000 Information Center* (http://year2000.com/y2ky2krace.html: September 24, 1998); archived at *Wayback Machine* (http://web.archive.org/web/20000303211646/http://year2000.com/y2ky2krace.html)
[266] Peter de Jager. "Promises to Keep." *The Year 2000 Information Center* (http://www.year2000.com/y2ky2kpromises.html: October 30, 1998); archived at *Wayback Machine* (http://web.archive.org/web/20000304160129/http://www.year2000.com/y2ky2kpromises.html).

minimize official declarations lest these should create later liability issues, but de Jager was also clear that "holding back good information creates uncertainty. It creates the foundation upon which to build panic."[267] Attending a UN gathering of "Y2K coordinators from some 120 member states" in December of 1998, de Jager felt he had "earned the right to heave that sigh of relief," as he beheld more and more evidence that the requisite attention was being mustered and applied.[268] And though de Jager still expressed frustration at the media's portrayal of the issue—"A pity the media cannot distinguish between those warning of a technical problem and offering solutions and those preaching old testament prophecies"—as 1998 ended, de Jager was seeing plenty of evidence of serious and sincere efforts.[269]

In September of 1996 de Jager was warning of "Doomsday 2000," but by March of 1999 de Jager was commenting on "Doomsday Avoided."[270] And though the former article, published as it was in *Computerworld* and not de Jager's website, certainly garnered more attention, the latter article provides an essential sequel to that earlier piece. De Jager began "Doomsday Avoided" with the statement "We've finally broken the back of the Y2K problem," and noted that he had been making some version of that statement for the preceding six months.[271] Acknowledging that "any good news about Y2K spoils the fun and intentions of those trying to incite panic," de Jager made clear that though he had been tarred as a "doomsayer, fear

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[267] Ibid.
[268] Peter de Jager. "An UNreal Question." *The Year 2000 Information Center* (http://www.year2000.com/y2ky2kunreal.html: December 14, 1998); archived at *Wayback Machine* (http://web.archive.org/web/20000416192645/http://www.year2000.com/y2ky2kunreal.html)
[269] Peter de Jager. "Failure as Evidence of Effort." *The Year 2000 Information Center* (http://www.year2000.com/archive/y2ky2kfailure.html: December 14, 1998); archived at *Wayback Machine* (http://web.archive.org/web/20000417111219/http://www.year2000.com/archive/y2ky2kfailure.html).
[270] Peter de Jager. "Doomsday Avoided." *The Year 2000 Information Center* (http://www.year2000.com/archive/y2ky2kdoomsday.html: March 1, 1999); archived at *Wayback Machine* (http://web.archive.org/web/20000307040119/http://www.year2000.com/archive/y2ky2kdoomsday.html).
[271] Ibid.

mongerer, dread merchant, and chicken little" he had had always advanced a "simple" message "The code is broken, I can prove it. If we don't fix it, then we face unpleasant consequences."[272] And now he emphasized that the "key phrase" was "IF we don't fix it."[273] Taking credit for the importance of sounding the alarm earlier, de Jager maintained the stance that "raising the warning was necessary," opining that "Without our warning, the IT industry would still be asleep at the wheel," but in assessing where things actually stood, de Jager contentedly stated "Most, not all companies are working on this issue. They are fixing, or have fixed, their systems."[274] De Jager was confident that the most essential sectors of "Finance, Telecommunications and Power companies" were mostly prepared, and fumed that lawyers in many industries were preventing their companies from announcing their good news, and that the media seemed more interested in covering the apocalyptic fringe than actually reporting on the progress.[275] With several months left in 1999, de Jager still stated that the problem had not been entirely solved, but once more he stated "we have avoided the doomsday scenarios…Through hard work and effort, we've broken the back of Y2K."[276]

De Jager's declaration of "Doomsday Avoided" earned him some "dissenting notes," but de Jager stood his ground emphasizing that this statement needed to be made "loudly and strongly" in order to counter "charlatans and religious extremists masquerading as technical experts and conspiracy theorists posing as computer consultants" with the added problem being that the media was giving a spotlight to those dangerous voices.[277] Dismissing "TEOTWAWKI"

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[272] Ibid.
[273] Ibid. Capitalization in original text.
[274] Ibid.
[275] Ibid.
[276] Ibid.
[277] Ibid. De Jager appended a further comment to the original "Doomsday Avoided" without an independent title other than "Greetings Folks." This quasi-follow up is dated March 17, 1999. They shared the same url.

as "unadulterated nonsense," de Jager nevertheless maintained that Y2K's back was broken even if that did not mean "the beast was dead," and argued that the only sort of preparations anyone needed to make were those similar to how they might prepare for a forecasted ice storm.[278] The change in tone and position were justified by a statement that de Jager had always followed the facts, and for a long time this had consisted of the fact that not enough attention was being paid to the problem, but "When the facts change, so will my message" and the fact of the matter was that the message had gotten through and doomsday had been avoided.

This shift did not entail de Jager telling everyone they could stop paying attention, but represented a continued commitment to asking people to be attentive to the scope of the situation. De Jager did not completely walk back his prediction of "severe disruption" that he had made in *Scientific American*, but he increasingly couched this forecast as being a scenario that was within the realm of possibilities, but not necessarily certain, and to those who were concerned he noted that "If your level of preparation is sufficient to cope with a 2-3 week disruption of services…I would state you've a sufficient level of preparation."[279] Clearly, de Jager was still engaging with the crisis, and even as he began to try to look back in search of lessons, he found himself commentating on various new issues that threatened to cause chaos; yet he largely treated these new problems as ones that had already been addressed.[280] And when the Y2K commentator Jim Lord published the so-called "Y2K Pentagon Papers," that purported to reveal that the US military was secretly preparing for the worst, de Jager responded by calmly

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[278] Ibid.
[279] de Jager. "How Bad, How Long, How Likely? Y2K Personal Preparation." *The Year 2000 Information Center.*
[280] Peter de Jager. "Confronting Hidden Secondary Clocks." *The Year 2000 Information Center* (http://www.year2000.com/y2kclocks.html: June 10, 1999); archived at *Wayback Machine* (http://web.archive.org/web/20000416022525/http://www.year2000.com/y2kclocks.html); Peter de Jager. "RTC Woes? Whoa!" *The Year 2000 Information Center* (http://year2000.com/y2kclocks2.html: July 13, 1999); archived at *Wayback Machine* (http://web.archive.org/web/20000303052115/http://year2000.com/y2kclocks2.html).

explaining that the report in question was in fact publicly available, out of date, and a "contingency planning document" meant as a "planning tool" not a secret government admission of impending doom.[281]

The change of outlook did not go completely unnoticed. In a cover story from the close of 1998, *The New York Times* again referred to de Jager as "perhaps the best-known year 2000 Paul Revere" while noting he "now predicts that the world will probably muddle through without the catastrophe he once foresaw"—and though that article had devoted attention to the various people working on fixing the problem, it chose not to acknowledge de Jager's own "if we don't fix it" focus.[282] By April of 1999 a piece in the *Washington Post* was noting that de Jager now was only predicting "there will be scattered glitches" and directly quoted his anti-apocalypticism alongside his statement "we've broken the back of Y2K."[283] The strange juxtaposition between the figure he had been cast as and his actual opinions was in particular display in the *Financial Times* wherein beneath a headline of "Prophet of doom fears confusion" the actual content made it clear that de Jager was not prophesizing doom but the much more banal "for the most part we are going to come through OK" with de Jager noting that he would be on board a plane at the time of the rollover to help show his confidence.[284] And in the pages of the publication where de Jager's Y2K prominence began, *Computerworld*, a brief interview with him featured the subheading "A well-known doomsayer changes his tune."[285]

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[281] Peter de Jager. "The Y2K Pentagon Papers – A Clarification." *The Year 2000 Information Center* (http://www.year2000.com/y2kpentagon.html: August 20, 1999); archived at *Wayback Machine* (http://web.archive.org/web/20000305064216/http://www.year2000.com/y2kpentagon.html).
[282] Barnaby Feder and Andrew Pollack. "Computers and Year 2000: A Race for Security (and Against Time)." *The New York Times.* December 27, 1998. A1, A22.
[283] Weeks. "We Have a Problem." C4.
[284] Rod Newing. "Prophet of doom fears confusion." *Financial Times.* October 6, 1999. 5.
[285] Matt Hamblen. "De Jager: Lighten up on Y2K." *Computerworld* 33, Iss. 25 (June 21, 1999): 47.

In that *Computerworld* interview, published more than six years after "Doomsday 2000," de Jager maintained that "This is the biggest, dumbest, most stupid blunder in the history of technology" but was emphasizing it was necessary to "find humor in that." As de Jager put it, "For the most part, we've done what we're supposed to do to fix the problem, and it's time to lighten up."[286] These references to humor were certainly in keeping with the book of cartoons and humor that de Jager had recently published titled *The Bug Stops Here!!!*[287] The book was filled with amusing quotations, alongside cartoons that generally depicted de Jager's bearded bespectacled face atop a body clad in the sackcloth robes of a medieval monk (or doomsday prophet). In one cartoon, de Jager is depicted standing atop a mountain holding the tablets of the ten commandments with an eleventh hanging off with a piece of tape, alongside the comment "Thou shalt not use two-digit date codes!"[288] The book's puckish sense of playfulness was captured by a fake quote from Charles Babbage that appeared on the book's cover that "If I'd known you'd make such a mess of it, I'd never have invented the computer."[289] Importantly, this was not de Jager's first foray into Y2K humor, years earlier he had posted enumerated lists on his website featuring titles such as "You're Not Working on the Year 2000 Date Problem Because…" that featured reasons such as "Government will pass legislation to roll back the clock to 1900" and "You were planning to phase out computers anyway."[290] Though *The Bug*

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[286] Ibid.
[287] Peter de Jager. *The Bug Stops Here!!!* Petrus & Associates Incorporated, 1999.
[288] Ibid, 174.
[289] Ibid, back cover.
[290] Peter de Jager. "You're Not Working on the Year 2000 Date Problem Because…" *The Year 2000 Information Center* (http://www.year2000.com/archive/notworking.html: 1995); archived at *Wayback Machine* (http://web.archive.org/web/20000308091255fw_/http://www.year2000.com/archive/notworking.html); Peter de Jager. "25 more reasons you're ignoring the Year 2000 Date Problem." *The Year 2000 Information Center* (http://www.year2000.com/archive/morereasons.html: 1995); archived at *Wayback Machine* (http://web.archive.org/web/20000307233257fw_/http://www.year2000.com/archive/morereasons.html); Peter de Jager. "Another FIFTY reasons." *The Year 2000 Information Center* (http://year2000.com/archive/another50.html);

Stops Here!!! was characterized by an overarching sense of relief, with de Jager acknowledging that when it came to Y2K "that to laugh at it, is to knowingly laugh at ourselves," and while he knew that he had often been maligned as a "doom sayer" he now hoped to be a "gloom slayer."[291]

As 1999 drew to a close, de Jager's tone was pensive but not particularly pessimistic. He had ruled out the possibility of doomsday, but like so many others he still found himself wondering just how sizable the bumps in the road would ultimately be. Though de Jager planned to be an airplane on New Year's Eve, he recognized that all around the world IT professionals would be ringing in the year 2000 by being at work at company (or institutional) command center poised to act should anything go wrong. And while there were certainly many IT workers who were not enthused to be working that night, de Jager stated "All of this work planned for the evening of December 31st is comforting. It is perhaps the best, most solid, proof we are now taking Y2K seriously."[292] Vigilance and readiness were essential, but de Jager also sought to remind his readership from within the IT world that glitches and bugs were not really that unheard of, and that not every issue they encountered during the rollover would necessarily be Y2K related.[293] While not quite celebratory, de Jager was certainly taking on a complimentary attitude, as he praised the work of IT professionals, and the level of cooperation between various companies—such as members of the High Tech Consortium (whose membership included AMD,

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archived at *Wayback Machine* (http://web.archive.org/web/20000603015540fw_/http://year2000.com/archive/another50.html).
[291] de Jager. *The Bug Stops Here!!!* 5.
[292] Peter de Jager. "A Danger in Vigilance." *The Year 2000 Information Center* (http://www.year2000.com/y2kvigilance.html: December 1, 1999); archived at *Wayback Machine* (*http://web.archive.org/web/20000304115053/http://www.year2000.com/y2kvigilance.html*).
[293] Ibid.

Compaq, Dell Computers, Motorola, Sun Microsystems, and many others).[294] And de Jager closed out the year with kudos, noting "Many of the things we feared, and planned against, we thankfully avoided."[295] De Jager pointed to recent surveys showing that many companies had already encountered some Y2K related failures, but noted that these had largely been manageable, which attested to the work that had been done, that testing was catching issues, and that any problems which remained would likely be manageable.[296] Some concerns certainly remained for de Jager, especially about the level of readiness of some other countries, but nevertheless sufficient work had been done as to turn a "systemic and pervasive" problem into one that had "been cut down to size."[297]

Thus, de Jager closed out 1999 not with a last-minute warning to batten down the hatches, but with gratitude. As he thanked those who would be "working that night to make sure things go as smoothly as possible," and those who had "wrestled your boss to the ground and refused to let them get up until they okayed the Y2K project," those who had "tried to calm some of the irrational fears generated by Y2K," those who had "put in more hours than you were paid for," and all of those who had "done anything to make sure the scenarios used to motivate people to action never took place."[298] And with these thanks delivered, there was nothing left to do but wait.

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[294] Peter de Jager. "A Best Kept Secret." *The Year 2000 Information Center* (http://www.year2000.com/y2ksecret.html: December 20, 1999); archived at *Wayback Machine* (http://web.archive.org/web/20000304032415/http://www.year2000.com/y2ksecret.html).
[295] Peter de Jager. "K2Y! – Kudos to You!" *The Year 2000 Information Center* (http://www.year2000.com/y2kkudos.html: December 21, 1999); archived at *Wayback Machine* (http://web.archive.org/web/20000303133323/http://www.year2000.com/y2kkudos.html).
[296] Ibid.
[297] Ibid.
[298] Ibid.

Conclusion

When 1999 finally rolled over to 2000, the world did not encounter "doomsday," indeed the world did not even encounter "severe disruptions." And though responsible post-mortems of the crisis would list hundreds of Y2K related incidents—while acknowledging that the vast majority of such incidents went unreported—it was easy to forget that by the final months of 1999 the man who had once written "doomsday 2000" had been arguing that the problem's "back had been broken" and that most of the remaining problems were of the sort that could be fixed on the fly. Where once de Jager had poured great effort into sounding the alarm about an impending disaster, in the aftermath of his warning having been heeded, he found himself being called to account for the non-event.

Writing in the pages of *The Washington Post* on January 3, 2000, de Jager framed Y2K not as a "sham" but as "a success story," one that started with an admission of the uncertainty with which many had gone into 2000, alongside "a sigh of relief when the lights stayed on."[299] Alongside a reminder that he had rung in the New Year not by cowering in a candlelit bunker but in a plane, de Jager noted that the instant the world failed to end "Y2K critics were sharpening their knives," treating "the lack of havoc" as "proof that the Y2K problem was an illusion, just as they suspected all along."[300] While recognizing that "Y2K has always been a question mark," de Jager pushed back on those who were highlighting the lack of catastrophe while failing to acknowledge all of the work that had gone into avoiding catastrophe. Furthermore, certainly aware of his continued association with the term "doomsday," de Jager stated "that the hype about Y2K including some of the more ludicrous statements, forced companies to examine their

[299] Peter de Jager. "Y2K: No Sham – A Success Story." *The Washington Post.* January 3, 2000. A19.
[300] Ibid.

systems" and encouraging a bit of critical reflection from readers de Jager pushed them to acknowledge that all of these companies would not have spent so much money had their analyses of their own systems not led them to conclude that there was a real problem.[301] With his comments appearing on January 3, de Jager cautioned that it was still premature for a complete declaration of victory, even if the signs thus far were encouraging.[302] De Jager treated it as unsurprising that "some projections were inaccurate, falling on both the low and the high sides of reality," and pointed to the lack of trustworthy information—particularly regarding other countries—as one factor that had stymied the attempt to make accurate predictions. As for his position, and that of his fellow alarm sounders, de Jager seemed quite aware of the trap they had sprung on themselves as, "Ironically, the greater our success, the more 'evidence' critics will cite for declaring that Y2K was an illusion."[303]

De Jager was hardly the only person who had worked on Y2K that found that instead of being celebrated for a job well done, they were now having to defend their earlier suggestions that there was even a job to do. In the *Los Angeles Times* the rather uneventful start of 2000 was met with a comment that "No group has dispersed more quickly than the doomsayers" and as evidence of this the article pointed to de Jager's decision to sell Year2000.com—and the decision to lump de Jager's Year2000.com in with "the doomsayers" was certainly an interesting journalistic decision considering how de Jager had clearly stated "doomsday avoided" on that very website.[304] NPR's "All Things Considered" conducted a short interview with de Jager on January 2, 2000, but rather than get his overall assessment the focus here was also on his

[301] Ibid.
[302] Ibid.
[303] Ibid.
[304] Ashley Dunn. "Y2K Industry Closing Shop After Quiet Passage to 2000." *Los Angeles Times.* January 5, 2000. A1, A8.

decision to sell his site (and the clearly fake $10 million bid the site had received).[305] And a few days after his piece in *The Washington Post,* de Jager found his own words being thrown back at him in that very publication, where E.J. Dionne Jr. responded to de Jager's commentary that "they never really said the problem would be all that bad" by countering that lots of people really had said the sky is falling—though here Dionne was clearly flattening the difference between de Jager and the most unshakably hyperbolic of the alarm sounders.[306] Throughout the run up to the year 2000, coverage of de Jager frequently noted that he made a very handsome income from his speaking fees, and that his website turned a tidy profit from advertising—yet it was far easier to frame de Jager as either a prophet of doom or as a profiteer of doom, than it was to actually engage with the content of his warnings, and to acknowledge that de Jager was willing to modulate his assessment as the situation changed.

In his own work on Y2K, de Jager had never been afraid to laugh at the absurdity of the problem, but he was clearly frustrated to see Y2K being treated as nothing more than a joke. In an interview that appeared in *Computerworld*, one that notes he had been "confident enough that nothing would go wrong, that he spent New Year's Eve on a plane," de Jager expressed exasperation at how many people were asking him "was it all hype, and did we really need to do anything."[307] De Jager grumbled over the perception that "there was no problem, that the only reason we spent this money is because people like myself convinced you to do it" and though de Jager comically observed that the suggestion that he had hoodwinked the world into investing all of this money "a rather peculiar compliment, in a way" this humorous aside could not fully mask

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[305] National Public Radio. "Interview: Canadian Business Consultant Peter de Jager Discusses His Web Site, Year2000.com, and His Decision to Sell It On Ebay." *Weekend All Things Considered.* January 2, 2000. *Gale In Context: U.S. History* (https://link-gale-com.proxy.library.upenn.edu/apps/doc/A166113064/UHIC?u=upenn_main&sid=bookmark-UHIC&xid=7899640b.)
[306] E.J. Dionne Jr. "Y2K: Profits From Doom." *The Washington Post.* January 7, 2000. A23.
[307] Anonymous. "Have We Learned from the Y2K Episode?" *Computerworld* 34, Iss. 2 (January 10, 2000): 19.

his irritation.[308] And lest de Jager's observation seem like too much of an attempt to save his own face, on the same page of *Computerworld* where that interview appeared was also a partial "Roundup of Y2K Glitches" that concluded with a comment from another Y2K analyst who noted "With everyone carrying the impression that things went so well, no company will want to look like it was the only one that fell down."[309] It was not so much that de Jager seemed worried that he was being held accountable for the things he had said, but that he seemed frustrated that he was being held accountable not for the actual things he had said, but for the things that people imagined he had said.

As the first month of the year 2000 drew to a close, de Jager posted a short acerbic piece to Year2000.com, a bullet pointed list under the heading "The Cautions of Cassandra."[310] Having previously been associated with Chicken Little, the boy who cried wolf, and Paul Revere—de Jager now brought another legendary prophet of doom into the mix. Though part of what clearly sets Cassandra apart from Chicken Little and the boy who cried wolf, is that she is cursed to prophesize the truth, but not have her warnings be believed. The points in "The Cautions of Cassandra" were short and pointed, and included aphoristic statements like "You can be forgiven of any crime, except the crime of being right when they publicly said you were wrong," "The worst predictions will be attributed to the most visible," "What's important is not what you said, but what they think they heard," "Hindsight always beats a prediction, by at least 20/20," and other observations along the same lines.[311]

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[308] Ibid.
[309] Computerworld Staff. "What Did Go Wrong: A Global Roundup of Y2K Glitches." *Computerworld* 34, Iss. 2 (January 10, 2000): 19.
[310] Peter de Jager. "The Cautions of Cassandra." *The Year 2000 Information Center* (http://www.year2000.com/y2kcassandra.html: January 28, 2000); archived at *Wayback Machine* (http://web.archive.org/web/20000302180355/http://www.year2000.com/y2kcassandra.html).
[311] Ibid.

Peter de Jager was something of a prophet, but more than that he was largely an analyst with the necessary technical skills to identify a serious problem, the credibility to be able to sound the alarm on it, and then keep a watchful gaze on the developments being made, resulting in a change in analysis as the situation altered. Yet, when it came to his prophetic powers, nowhere was this more clearly on display that in the dedication to *Countdown Y2K*, "to the boy who cried wolf and never got the credit he deserved."[312] Of course, the tale of the boy who cried wolf is often treated as a warning about the danger of falsely sounding an alarm—meaning that when the threat actually arrives, no help will come. However, de Jager's positive nod towards that fable suggests an alternative reading, one that suggests that perhaps the boy's cries had been accurate and it was precisely that everyone came running in response to those cries that helped to initially drive the wolf away. True, the fable ends with the boy being eaten, but what if the reason the boy had not been eaten before was because he had cried out in time? And what if the true lesson of the fable is that in a world filled with wolves, steps need to be taken to protect against them? Such a rereading of that fable is not unique to de Jager,[313] but with his gesture towards that fable—one made before the rollover to Y2K actually occurred, de Jager seemed to be demonstrating an impressive level of prescience both in terms of what would happen, and in terms of how he would ultimately be perceived.

The history of Y2K is not by any means exclusively the story of Peter de Jager, yet he remains a useful lens through which to critically evaluate that history. From sounding the alarm in "Doomsday 2000," to becoming a prominent tocsin consistently driving home a clear warning and explanation of the underlying problem, to eventually recognizing that the alarm was being

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[312] de Jager and Bergeon. *Countdown Y2K*.
[313] See: David Fleming. *Surviving the Future: Culture, Carnival and Capital in the Aftermath of the Market Economy* (White River Junction: Chelsea Green Publishing, 2016).

heard and the work being completed, to the pronouncement of "doomsday avoided," and ultimately finding that all that was remembered was the initial "Doomsday 2000"—de Jager provides in one person a sort of simplified summary of the way that Y2K is often recalled. Where the remembrance is placed on the initial frightening prediction, but where little attention is then subsequently played to the work that went into heeding that prediction, and to the fact that the work that went into heeding that prediction played a role in ensuring that the predicted calamity did not occur. Indeed, as de Jager mused at the start of 2000 "it's always easier to predict the future after it becomes history."[314]

[314] de Jager. "Y2K: No Sham – A Success Story." A19.

Chapter Two: The Canaries in the Code Mines

In describing Y2K, and its potential consequences, in the pages of the Institute of Electrical and Electronics Engineers' *Computer* magazine, Howard Rubin sought to describe the problem as a feature not a bug of a world that had been transformed by computer technologies. Drawing out parallels between more familiar sorts of natural hazards and this new form of technological hazard, Rubin reminded *Computer's* readers that the Earth had a "physical geography…which is affected by things like earthquakes and fires," as well as an "atmospheric layer, which experiences all sorts of weather disturbances."[315] And to this Rubin added that "it makes sense that in the Information Age we have an information or electronic layer as well" and to this he added that "Y2K is just one manifestation of disturbances in this new cyber-geographic layer."[316]

These comments appeared in the first installment of Rubin's "Diary of a Y2K Consultant," a column of sorts that ran in *Computer* over the course of 1999. While Rubin was hardly the only Y2K consultant, and certainly not the only figure in the computing world working on Y2K, he was also on the editorial board for *Computer,* a tenured professor and chair of the computer science department at the City University of New York's Hunter College, and a prominent commentator on Y2K.[317] In short, his credentials for commenting on Y2K were impeccable, which was important considering how the piece began with an introduction that acknowledged that awareness and anxiety about Y2K were becoming more widespread, while

[315] Howard Rubin. "Diary of a Y2K Consultant: Bracing for the Millennium." *Computer* 32, No. 1 (January 1999): 51-56. 52.
[316] Ibid.
[317] Ibid, 51.

also warning that "consultants eager for publicity utter dire warnings of a computer-generated apocalypse."[318] Yet in critically invoking the sorts of consultants who were out to generate publicity, the introduction seemed to be drawing out a firm juxtaposition between such untrustworthy folks, and the likes of Rubin—who was introduced as providing "good counsel," with it being noted that he had even provided that information to the top echelons of the US government.[319] And throughout 1999, Rubin was going to make that "good counsel" available to the readers of *Computer*.

Having started his explanation by describing Y2K as the equivalent in the "cyber-geographic layer" to "earthquakes and fires" and "weather disturbances" a reader could be forgiven for initially thinking that Rubin was prepared to deliver a grim forecast for Y2K. However, the picture that Rubin drew out was significantly less gloomy. As Rubin put it, basing his comments on the research he had done, "the large companies know what they're doing," and while he noted that his "biggest concerns" were linked to "intercompany connections" his analysis was that the work that needed to be done was largely being done—and while those who worked in the computing world needed to remain focused on the problem, they also did not need to panic.[320] Returning to his allusion to natural hazards, Rubin acknowledged that Y2K "will result in some disruptions" though he noted this would be "noting more catastrophic than we've encountered through unfortunate natural disasters" and he stated confidently "it's very unlikely that Y2K will be the equivalent of a Force 5 hurricane. It may even be less severe than a tropical storm."[321] With some introspection, Rubin recognized that he had "been accused of being

[318] Ibid.
[319] Ibid.
[320] Ibid, 52.
[321] Ibid.

uncommonly upbeat about the Year 2000 crisis," but he emphasized that "at worst…Y2K will be the weather equivalent of a sunspot barrage."[322] Denying that he was an optimist by nature, Rubin described himself as "a major risk manager," and from this pivoted to the importance of contingency planning as key to responsibly preparing for Y2K.[323]

The article was illustrated with pull quotes featuring the not particularly subtle image of an ostrich burying its head in the sand, as well as one image of an ostrich poking its head up through the sand. And alongside Rubin's commentary the article also featured a number of graphs and tables providing estimates on how much companies in various countries were preparing to spend to fix their Y2K problems, as well as survey results (albeit from 1998) pertaining to the status and future Y2K related plans for 128 different Fortune 500 companies. Though Rubin remained steadfast in highlighting that Y2K was a real problem that required real attention, his commentary continually emphasized that companies that were committed to surviving into the year 2000 (and beyond), really were taking their Y2K problems seriously—even as he emphasized that it was important for such companies to engage in contingency planning, just to be safe. In expressing concerns about how Y2K could ripple through the business world, Rubin did note slightly more worry about the status of smaller companies, with less IT funding to allocate, which were nevertheless part of some larger company's supply chain, but here too he noted "larger companies will put wonderful pressure on them."[324]

The vision Rubin articulated was a decidedly non-apocalyptic one, and even as he admitted "I would rather be close to home in case something happens on 1 January 2000 that I'm not expecting," he expressed doubt in the sorts of "urban legends" that were cropping up about

[322] Ibid.
[323] Ibid, 53.
[324] Ibid, 54.

Y2K.[325] Responding to fears that some people would get stuck in their elevators when the date rolled over, Rubin described this fear as "unfounded" emphasizing that the elevator companies and building managers were on top of the problem, and in terms of one of the biggest worries amongst the Y2K alarmed, Rubin stated "it looks like the US power grid is very, very stable in terms of the big players and generators," and he similarly highlighted the work being done by the telecommunications companies to ensure that they were ready.[326]

These reassuring comments were made with full knowledge that they were in stark contrast to the foreboding tones with which Y2K was often discussed—Rubin placed the blame for this on groups like the "Cassandra project, people who are survivalists, some even quite knowledgeable" as well as those "organizing around the Year 2000 as if it's a religious experience."[327] Yet Rubin also highlighted the role that the media had played in helping to elevate those prophesizing doom, even as voices like his were drowned out, noting "CBS New contacts me regularly for information on Y2K, but they don't really want to speak to me, they want the crazies."[328] Rubin had noted that he expected some disruptions would likely occur, but he was hesitant to make any sort of statement that was too definitive, and he criticized those making such emphatic statements: "I assume they've lived through Y2K before."[329] It was the start of 1999, and Rubin could already see that several of the Y2K consultancy groups were starting to rebrand and reposition themselves for what would come next, but beyond the

[325] Ibid, 55.
[326] Ibid.
[327] Ibid. The Cassandra Project is described in greater detail in Chapter 5 of this dissertation.
[328] Ibid.
[329] Ibid, 56.

technical sphere, Rubin noted "I think nontechnical people will experience a general loss of faith in information technology. They'll ask us how we could have done something so insane."[330]

Howard Rubin was hardly the only IT professional speaking on the seriousness of Y2K while trying to maintain a carefully measured tone. People from many sectors of society—including the government, media, and anxious activists (groups that will be documented in later chapters of this dissertation)—were concerned about Y2K. What continually served to justify these groups worries, and what they consistently drew upon as source material, was the fact that there were figures from within the IT and computing communities who were themselves urging action on Y2K. And though, as Rubin's comment about "the crazies" suggests, there could be a gap between what the experts from the IT world were actually saying and the way their messages were eventually taken up and echoed by those who were not themselves technical experts—many figures from within the IT world clearly saw Y2K as a serious problem. That few of these figures seem to have believed that Y2K truly represented an apocalyptic threat is important to recognize, though as many of these figures also made clear it is possible for something to fall short of cataclysmic and still represent a serious problem requiring attention, resources, and action.

This chapter considers how Y2K looked to members of the IT community, and how those with genuine computer expertise tried to make sense of the problem and represent it to their colleagues, managers, executives, and (in some cases) the broader public. While Peter de Jager, who was discussed at length in the previous chapter, certainly deserves to be seen as a member of the IT community, the individuals and groups discussed in this chapter are (for the most part) ones that did not become the poster children for Y2K in quite the same way that de Jager did—

[330] Ibid.

for these groups and individuals Y2K became a matter that needed to be focused on as it was part of their overall work within the world of computing. This chapter will begin by considering how members of the IT community described Y2K: how they explained the problem's origins and how they sought to make sense of the problem it represented both as an actual threat to society and as an embarrassing mark on their professional community. Next, the chapter will discuss the ways that the IT community sought to go about the work of actually fixing the problem. While members of the IT community tended not to go in for the most disastrous forecasts about what Y2K might bring, the next section considers some of the forecasts from within the IT community. Finally, this chapter considers one of the members of the IT community who took a distinctly more pessimistic stance towards Y2K, and who used his stellar technical credentials to enhance the credibility of his ominous predictions. While a wide range of figures from within the IT community commented on Y2K to varying extents, for the most part the individuals in this chapter were selected for inclusion here because even as they addressed themselves to their IT colleagues, their names were frequently referred to in the broader (not strictly technical) discourse around Y2K.

As this chapter documents, many in the IT world recognized that Y2K was a problem of their own making, and a problem for which they would be blamed, but they also recognized that the implications of it went far beyond IT.

The shape of the problem

"The Y2K problem may well be remembered as the most costly misapplication of expedience in history," at least this was how James Sanders, the editor of *IEEE Software* framed

the problem in the middle of 1998.[331] By that point Y2K had already become old hat to people within the computing community, who had been aware of, and working on the problem for several years. With his allusion to "expedience," Sanders was making a callback to the fairly banal origins of Y2K, in the decision by programmers to truncate dates. This was the origin story of Y2K that was repeated over and over again within (and without) the IT community, that placed Y2K's roots in a moment in computing's history when memory was at a premium and thus (responding to pressure to save money from their managers) programmers represented dates using six characters instead of eight. A decision that saved memory, and which therefore saved money, and which was in keeping with the way that many people naturally talk about dates. After all, as Sanders put it, drawing upon an observation from fellow *IEEE Software* editor Bob Glass, Sanders observed that while it is "common practice for us to refer to dates in a two-digit format…doing so in conversation is essentially harmless, while doing so in code may cost us billions."[332]

At the time the decision to truncate dates was made, the choice made quite a lot of sense, especially given the limitations of computers in the 1960s. The problem was not so much the decision to truncate dates, but two interconnected beliefs: that the code being written in the 1960s would not still be in use by the time 2000 rolled around, and/or that surely someone else would fix the problem long before the year 2000. As Capers Jones put it, the explanation for the tardiness of the IT profession in getting around to fixing Y2K was less reflective of anything wrong specifically with the IT sector and was more reflective of "a general human tendency to

[331] James Sanders. "Y2K: Don't Play It Again, Sam." *IEEE Software* 15, No. 3 (May/June 1998): 100-102. 100.
[332] Ibid, 100-101.

avoid trying to solve problems until the evidence is overwhelming."[333] Granted, even if for programmers working in the 1960s the end of the century seemed "a lifetime away," as William Ulrich and Ian Hayes observed, while computers had been replaced by newer machines "Many of the original programs and corresponding data were brought along from one generation of machine to another" meaning that "Even when replacement systems were developed, they used the old data formats."[334] In other words, even after it was no longer necessary to truncate dates in order to save precious memory space (and precious money), the format kept being used.

Of course, there were figures within the IT sector who had tried to sound the alarm long before Y2K became a common shorthand for the problem. Credit for first sounding the alarm is often given to the computer scientist Robert Bemer whose warnings in the 1970s, directed primarily at computer professionals went largely unheeded.[335] And nearly ten years before de Jager's "Doomsday 2000," *Computerworld* had tried to alert its readership about "the problem you may not know you have."[336] Beyond the annoyance of the problem itself, part of what made the crisis so frustrating was its very obviousness, as Jones lamented, "This problem has been theoretically discussed for more than 25 years, and its significance has been hypothesized with increasing alarm for more than 10 years," and to this he added "It is not a credit to the human race nor to the software industry that such an obvious problem with such a straightforward technical solution should have reached the magnitude that is likely to occur."[337] As Sanders

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[333] Capers Jones *The Year 2000 Software Problem: Quantifying the Costs and Assessing the Consequences*. New York: The ACM Press, 1998. 207.
[334] Ulrich, William M., and Hayes, Ian S. *The Year 2000 Software Crisis: Challenge of the Century* (Upper Saddle River: Prentice Hall PTR, 1997). 5. This book was part of the Yourdon Press Computing Series—Yourdon is discussed at greater length later in this chapter.
[335] R.W. Bemer. "What's the Date?" *Honeywell Computer Journal* 5, No. 4, (1971): 205-208; R.W. Bemer. "Time and the computer." *Interface Age Magazine* 4, No.2 (February 1979): 74-79.
[336] Paul Gillin. "The problem you may not know you have." *Computerworld* 18, No. 7 (February 13, 1984): 7-8.
[337] Jones, *The Year 2000 Software Problem.* 207.

noted in *IEEE Software*, Y2K was providing people in the IT industry with an unwanted reminder of an old adage, namely: "Old computer hardware goes into museums, old software goes into production every night."[338]

For those within the IT community, Y2K represented two interwoven threats. First, and most importantly, was the actual danger posed by Y2K related computer failures which members of the IT sector recognized could have impacts on a wide range of companies and institutions. Second, but still significant, was the danger that Y2K posed for the IT profession, in terms of the way that IT professionals might be the ones who would ultimately be blamed, and the risk that serious Y2K related failures could lead to people turning against the computing community (and potentially against computing itself). These two risks were closely linked, as the only way to avoid the hazards of the second variety, would be to ensure that the hazards of the first variety were successfully ameliorated. And though some figures, as will be discussed later in this chapter, did believe that there were some "silver linings" to be found in the storm clouds of Y2K, it was still necessary to do something about the dangerous conditions those storm clouds were bringing. And at the core of both recognitions of looming dangers was a recognition within the IT community that modern societies had become incredibly dependent on computer systems, and as a result those societies had become incredibly dependent on the professionals with the necessary expertise to keep those systems functioning. A sentiment driven home by a lengthy and lavishly illustrated overview article that appeared in *IEEE Spectrum* which observed that Y2K "serves to point out how the world has come to rely on computers for its on-going

[338] Sanders, "Y2K: Don't Play It Again Sam." 101.

operation. In the last half century, people have grown to accept computers as part of everyday life, practically oblivious to their role."[339]

In a report he issued as Chairman of Software Productivity Research, Inc., Capers Jones laid out "The Global Economic Impact of the Year 2000 Software Problem," doing so in a way that juxtaposed the actual hazards from the distracting myths, while highlighting the particular ways that Y2K threatened a variety of sectors.[340] Jones did not mince words, making it clear in his executive summary that "The year 2000 problem is not trivial and will not go away if ignored" and the sorts of failures that might occur if Y2K was not addressed included "litigation, possible bankruptcy, and possible business failure."[341] Jones compared the number of systems that had been consistently recording dates "with two-digit fields" as being similar to "the slow accumulation of arsenic" and he warned that the time was coming soon when this "slow and steady accumulation…will cause the applications containing" the arsenic of two-digit fields "to perish."[342] And Jones made it clear that the reason why this was a matter of such seriousness was because "Computers and software now drive the main operating components of every major company, government, and military organization in the world."[343] Outlining the "hazardous implications" of Y2K, Jones drew attention to the ways that Y2K could cause issues for software that made "long range-calculations" (which would include software involved in such things as calculating "mortgages…pension payments…social security"); Y2K could cause issues for spreadsheet programs upon which many businesses relied; "personal information managers" as

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[339] Richard Comerford and Tekla S. Perry. "Brooding on the Year 2000." *IEEE Spectrum* 35, Iss. 6 (June 1998): 68-73. 71.
[340] Capers Jones. *The Global Economic Impact of the Year 2000 Software Problem.* Version 4 – September 23, 1996. (Burlington: Software Productivity Research, Inc. 1999).
[341] Ibid, 4.
[342] Ibid, 5.
[343] Ibid.

well as "personal computers" could encounter issues in their "calendar applications;" software being used by "commercial and military aircraft, weapons systems" as well as "software on board satellites" could be impacted; some "operating systems" that used "calendar and clock routines" might fail; and the software involved in various telecommunications services might encounter problems.[344] And beyond all of these frontline technical problems was also the significant risk that the sorts of technical failures Jones had outlined could in turn give rise to a veritable avalanche of litigation as individuals and companies sought to recoup their failure related costs by suing the companies (and people) who they held responsible for fixing the problem in the first place.[345] Acknowledging the two extremes of "denial and exaggeration" that either treated Y2K as no real problem or as "severe enough to trigger a business depression," Jones charted a middle course emphasizing that Y2K was a real crisis that needed to be fixed—and that it would not simply be possible for every company to replace its software with newer programs—while emphasizing that all was not lost.[346]

After first admitting that there was a problem, the next step was to try and get a grasp on the overall scale of the problem, "to construct an approximate inventory of the total volume of software installed and operational in the United States, and then utilize the U.S. data as a jumping off place for evaluating the hazards of other countries."[347] And here, Y2K revealed another prickly part of the software crisis: that so many companies and institutions did not even have a good grasp on how much software they used. Furthermore, though it was not uncommon to see many Y2K problems discussed in terms of COBOL, Jones made clear that this

[344] Ibid, 7-8.
[345] Ibid, 8.
[346] Ibid, 10-11.
[347] Ibid, 16.

inventorying needed to be attentive to many languages beyond COBOL. For the sake of estimating the scale of Y2K related issues, some (including the Gartner Group) had argued that lines of code should be used, but Jones argued instead for attention to function points. In arguing for function points, Jones emphasized that in some programming languages "there is not an accurate definition of what a 'line of code' is in that language," and across different programming languages "there are wide variations in how lines of code are counted."[348] Thus, Jones argued for function points as the metric, noting that this metric had "become the most widely used metric in the software world."[349] And as Jones further explained "the function point count of a software application" considered "five external attributes of the application: Inputs, Outputs, Inquiries, Logical Files, Interfaces."[350] Jones noted that an "interesting coincidence," that added to the utility of function points was that "each reference to a calendar date in a software application seems to require approximately one function point" thereby making function points a "comparatively straight-forward" way of figuring out how many areas were potentially impacted by Y2K.[351]

Thus, in considering many of the most commonly used code languages (including COBOL, FORTRAN, C, and others), Jones estimated that there were some 1,702,125,000 function points in the software portfolios of the US.[352] And when it came to estimating the available labor pool for handling this problem (again, focusing in the US) Jones hedged his numeric estimate by noting that there were many people with some computer literacy even if

[348] Ibid.
[349] Ibid.
[350] Ibid 17.
[351] Ibid, 18.
[352] Ibid.

they were not explicitly professional programmers.[353] In terms of the available labor, Jones also highlighted that it was not quite as simple as just assigning the available workers, as there were some languages that could be effected by the year 2000 problem that had "a current shortage of available tools or trained programmers available," with this issue being further compounded by the various companies that relied on their own fairly unique (and likely poorly documented) home brewed coding languages.[354] Jones couched his numbers in a recognition that they were likely "to be imperfect and have a high margin of error" but this was just a symptom of the larger problem that there had "never been an accurate or even approximate inventory of the total volume of software developed within any country" let alone the US.[355] Mapping the 1,702,125,000 number onto actual software portfolios, Jones found that the highest individual area was the military, though this did not detract from other sectors that had millions of function points.[356] While continually recognizing that his numbers might not be entirely correct, Jones noted that Y2K would affect "industrialized and computerized nations much more severely than those that are not yet fully automated" and this meant "the costs of the year 2000 problem will be greater in the United States than in any other country."[357]

Jones's analysis provided a sense of the scale of the problem, but Leon Kappelman put the danger of this scale into scaly relief. In trying to lay out what could go wrong should Y2K related problems go unaddressed, Kappelman drew attention to three possibilities: "Date Related

[353] Ibid.
[354] Ibid.
[355] Ibid, 21.
[356] Ibid, 21-22.
[357] Ibid, 22.

Abend, Garbage, Or Nothing."[358] A "Date Related Abend" meant that the problem was "caused by date-related computer processing errors" and that it might involve "a total program shutdown" as for a application "to stop processing" is the meaning of "Abend."[359] "Garbage" stood for "inappropriate inputs or outputs…erroneous data" signifying the risk that Y2K related errors could contaminate systems with all manner of junk information.[360] And while "Date Related Abend" and "Garbage" presented two distinctly unpleasant scenarios, there was also the possibility of "Or Nothing" happening.[361] These three possibilities came together to represent DRAGONs, "the definite DRAGONs of today…silicon-based monsters" that "are far more terrible than any carbon-based dragon ever imagined. And far, far more numerous."[362] As Kappelman explained it was unknown how many DRAGONs there really were "or what horrible harm they each might cause" yet "every single solitary DRAGON has the potential to damage, to destroy, and even to kill."[363] With amusingly playful language for such a serious problem, Kappelman framed Y2K as a "tale of noble heroes and terrible monsters…A true tale of steadfast heroes fighting to defend our way of life, our very existence—warriors fighting unsung, until now."[364] In Kappelman's description, those working on Y2K were no mere programmers or IT professionals. No, they were DRAGONslayers!

While the evocation of DRAGONs has a certain undeniably humorous quality to it, one that Kappelman seems to have been clearly playing into, the three possibilities that the acronym

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[358] Leon Kappelman. "Part One: What is the Year 2000 Problem? – A Call to Arms," in *Year 2000 Problem: Strategies and Solutions from the Fortune 100*, ed. Leon Kappelman (Boston: International Thomson Computer Press, 1997): 1-6. 1.
[359] Ibid.
[360] Ibid.
[361] Ibid.
[362] Leon Kappelman. "Preface: Setting the Stage," in *Year 2000 Problem: Strategies and Solutions from the Fortune 100*, ed. Leon Kappelman (Boston: International Thomson Computer Press, 1997): xxxiii-xxxiv. . xxxiii.
[363] Ibid.
[364] Ibid.

stood for provided a simple way of getting at what could go wrong. Jones had given a sense of the overall size of the problem, but DRAGON provided a straightforward way of establishing what the problem really was—after all, it was not just a matter of there being a lot of function points out there, but that those function points were going to potentially run into trouble when the year 2000 arrived.[365] Despite the use of somewhat silly language, Kappelman emphasized that the danger was serious: "These abending DRAGONs have the potential to cause devastating destruction and death," the "Garbage" could have results that would "range from minor inconvenience to calamitous chaos and carnage," and left completely ignored even the "Or Nothing" had "a tendency to become Abends and Garbages."[366] And as for the places where these DRAGONs might strike, Kappelman noted that "At risk are any and all application software, system software, or hardware platforms that use date references, which means most software and hardware" putting this in even clearer detail Kappelman clarified that this meant "At risk are the systems that control the operations of factories of all kinds, military defenses, transportation systems, and public utilities."[367] In short, many of the institutions and infrastructures upon which much of modern life depended.

Though the repeated mention of DRAGONs and DRAGONslayers gave some of Kappelman's commentary a certain fantastical flair, writing alongside Phil Scott he highlighted that this was not some flight of fancy. Instead, at the core of this risk of DRAGONs was the basic reality that "The world has become extremely dependent on computer technology. Many

[365] It should be noted that Kappelman is clearly drawing on the analysis that Jones had put forth. Indeed, a version of Jones's report makes up chapter 1.2 of Kappelman's edited volume. And a comparison between the version of Jones's report included in Kappelman's volume, and the report quoted from earlier, it is clear that Kappelman republishes much of Jones's report verbatim. In short, Kappelman is not in disagreement with Jones or with Jones's assessment—though Kappelman's summoning up of "DRAGONs" is a more striking way of framing the problem than Jones's more straightforward analysis.
[366] Kappelman. "Part One: What is the Year 2000 Problem? – A Call to Arms." 2.
[367] Ibid, 3.

benefits have resulted from it, but this dependency is not without its risks."[368] And this level of dependence was such that if all the "computers began to malfunction" it would mean "The global economy would come to a screeching halt."[369] And while such a situation was not treated as by any means a certainty, or even particularly likely, it was still noted that "If not mitigated, the year 2000 date problem has the potential to shut down or severely hinder, nearly all the world's computer systems."[370] Furthermore, as Jones's work outlining the scale of the danger made clear, those who had been working on trying to fix the problem had learned "there is no silver bullet and that the problem is bigger and more complicated than they ever suspected."[371] While avoiding explicitly apocalyptic language, and recognizing that work was being done, Kappelman and Scott noted they were "convinced that unless there is a remarkable increase in the rate of progress being made…we may be in for a crisis that will make the Savings and Loan Crisis look like child's play."[372] The scale of the potential damages was so significant that businesses and the government could not ignore the risks. And as the following chapters in Kappelman's edited volume made clear, DRAGON eggs had been laid in microcomputers, embedded systems, and could be found everywhere in military systems.

Nevertheless, even if figures like Kappelman and Jones agreed about the outlines of the problem—its overall scale and the sorts of risks it presented—there were some voices from within the IT community with a more optimistic assessment. As Nicholas Zvegintzov put it in the not particularly subtlety titled "The Year 2000 as racket and ruse," all the hubbub around

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[368] Leon Kappelman and Phil Scott. "1.1 What Everyone Should Know about the Year 2000 Century Date Problem," in *Year 2000 Problem: Strategies and Solutions from the Fortune 100*, ed. Leon Kappelman (Boston: International Thomson Computer Press, 1997): 8-11. 9.
[369] Ibid.
[370] Ibid.
[371] Ibid.
[372] Ibid, 10.

Y2K might be overblown.[373] Zvegintzov criticized how Y2K was treated "as huge, difficult, dangerous, and unique" noting that within this "racket—the problem is free but solutions are for sale."[374] Importantly, Zvegintzov was not denying the existence of the problem, he stated "it has a basis in reality" adding later in his piece "it is a real software problem," but he was critical of the way "lay people" thought they understood the problem and further highlighted how millennial transitions were always periods of heightened "superstition."[375] Zvegintzov noted that "no technology since alchemy has so excited superstition as computers have," and noted that many of the reactions to Y2K were at core "superstitious beliefs."[376] In Zvegintzov's estimation, "Dealing with the Year 2000 problem is a simple software task…an exercise for the software novice."[377] Yet he argued it was functioning as an excellent "ruse," whereby "software people" were taking advantage of the public anxiety as a way for them to "attract resources that they need—tools for training and preventive maintenance."[378] In a brief interview roughly a year after Zvegintzov's "racket and ruse" article he emphasized "there's more money in believing it's a disaster" even as he partially explained how Y2K had become "a big news story" by acknowledging "it is real; there will be some problems."[379] It might be a "racket and ruse" but it was also seemingly unignorable, as Zvegintzov noted elsewhere in offering advice "companies need to establish some procedure for finding out what might go wrong with their systems and

[373] Nicholas Zvegintzov. "The Year 2000 as Racket and Ruse." *American Programmer*. February 1996: 16. This article was also available ("reprinted with permission of the author") on the Peter de Jager's *The Year 2000 Information Center* (http://year2000.com/archive/y2kracket.html: February 1996); archived at *Wayback Machine* (http://web.archive.org/web/20000530200430fw_/http://year2000.com/archive/y2kracket.html).
[374] Ibid.
[375] Ibid.
[376] Ibid.
[377] Ibid.
[378] Ibid.
[379] Minda Zetlin. "Much ado about nothing?" *Management Review* 86, Iss. 5 (May 1997): 13.

how bad it would be for business."[380] Zvegintzov may not have been eager to declare "here be DRAGONs," but it seems he could not deny that the thatched roof cottages in which everyone was dwelling really were quite flammable.

The primary danger posed by Y2K was clearly of the sort that Jones and Kappelman had focused on: a date-related problem visible in the vast number of function points filling up the world's software portfolio, with these various points having the potential to result in "abends," "garbage," or possibly "nothing." A problem that had its origins amongst computer professionals, and which they were now the main people responsible for fixing before time ran out. And thus, even as the primary danger remained the threat that Y2K actually posed to computer systems, and the world that had come to be so heavily dependent on those computer systems, computing professionals were aware that a secondary risk was that Y2K would not wind up reflecting on them as a profession particularly well. It was possible to emphasize that the programmers who had originally made the decision to truncate dates had been responding to pressure from managers, and that the costs of fixing Y2K needed to be considered in parallel with how much money the decision to truncate dates had itself saved[381]—but there was still an understanding that Y2K could be seen as embarrassing for computer professionals.

The concern for what Y2K would mean for computer professionals was ruminated on by Sanders as one of the "consequences" worth considering: "Beneath they hype, hysteria, and irresponsible profit seeking," for as he put it regardless of what the ultimate consequences might

[380] Anonymous. "Preventing time from marching backward." *Nation's Business* 85, Iss. 1 (Jan. 1997): 44.
[381] Leon Kappelman and Phil Scott. "1.6 Accrued Savings of the Year 2000 Problem," in *Year 2000 Problem: Strategies and Solutions from the Fortune 100*, ed. Leon Kappelman (Boston: International Thomson Computer Press, 1997): 53-54.

be "they will reflect poorly on our profession."[382] In a similar way, Jones observed that there were some who believed that computer professionals "have not been regarded by the older professions such as electrical and mechanical engineers as being true engineers or even true professionals," and considering that "the software industry, collectively, has brough about one of the most expensive and hazardous problems in human history when it could have been avoided is going to lower our status even more."[383] And even as Kappelman had sought to ensure that management shared the blame for Y2K's origins, he also recognized that "The 'bottom line' is that IS professionals are responsible for the effective development and operation of information systems."[384] Granted, for all of the peril there was also some promise, as James Schultz described it in the pages of *IEEE Software* "Managing a Y2K project may well be the challenge of your career" however it also enabled those involved to make "a critical contribution" and to "be one of a few who have digitally enabled the 21st century."[385] Though Rubin, in another installment of his "Y2K Diary," noted that "Our technological superstructure, in its current state, is really fragile" he added that "Y2K is a blessing in disguise because it's the first major technology threat we've seen coming" meaning computer professionals were "witnessing the birth of new disaster models" and thus positioning themselves as the professionals capable of responding to these new threats.[386] And despite his framing Y2K as "racket and ruse," Zvegintzov noted that he

[382] Sanders, "Y2K: Don't Play It Again, Sam." 102.
[383] Jones. *The Year 2000 Software Problem.* 207.
[384] Leon Kappelman and James Cappel. "2.1 Overcoming Year 2000 Avoidance," in *Year 2000 Problem: Strategies and Solutions from the Fortune 100*, ed. Leon Kappelman (Boston: International Thomson Computer Press, 1997): 58-62. 61.
[385] James Schultz. "Managing a Y2K Project—Starting Now." *IEEE Software* 15, No. 3 (May/June 1998): 63-71. 71.
[386] Howard Rubin. "Uncovering Weak Links in the Readiness Chain." *Computer* 32, No. 10 (Oct. 1999): 20.

was "optimistic that we shall handle the Year 2000 problem" and added to this that he was "even optimistic that it will help to raise professionalism and technical skill."[387]

Perhaps the IT professionals would be praised as valiant DRAGONslayers for their selfless and heroic efforts in the face of the swarm of dangerous beasts (which they had themselves helped summon)…but in order to be praised as a DRAGONslayer it was necessary to actually slay the DRAGONs.

How Do You Solve a Problem Like Y2K?

Despite the difficulty entailed in truly coming to terms with the full size of the year 2000 computer problem, in some respects recognizing that there was a problem was the easy part. The difficult task was actually setting to work fixing the problem within the limited timeframe that remained. And given the enormity of the task at hand it was clearly insufficient to simply leave it at "just go fix it." It was necessary to have a plan, so that those in IT and their managers, could know what to do.

Bryce Ragland broke the approach to Y2K down to five steps: "Awareness; Assessment; Renovation; Validation; Implementation."[388] This was a process that, as Capers Jones put it in his foreword to Ragland's book, was very much in keeping with the view that "There are no quick 'silver bullets' that will make the problem go away overnight with little effort and low

[387] Shawn Bohner, Thomas Backman, Elliot Chikofsky, Peter de Jager, and Nicholas Zvegintzov. "Examining Year 2000 Date Challenges from the Maintenance Perspective." *1996 Proceedings of International Conference on Software Maintenance* (November 4-8, 1996): 125-128. 128.
[388] Bryce Ragland. *The Year 2000 Problem Solver: A Five-Step Disaster Prevention Plan.* (New York: McGraw-Hill, 1997). 53.

costs."[389] The first step "Awareness" was the one that at the time of Ragland's book's publication (1997), he saw as the "phase that most organizations are in right now" with this step representing the essential first work of simply making upper management aware of Y2K and convincing them that it was a problem that they needed to take seriously—here it was necessary not only for the manager to be made "aware of the magnitude of the problem" but also to "ensure that the maintainer knows what to look for."[390] The next step "Assessment" would be "where most of the hard work is going to take place," here was where the work of actually inventorying systems took place which required cataloging the various hardware and software, identifying which programming languages were used, figuring out where all of these systems were located, and also determining what other systems a company's own systems interacted with.[391] "Renovation" was "where you actually make the change" a step that promised to provide even more information about the scope of the project as it was where the company actually began the work—though here it was essential not to fall behind. While some may have hoped that the process could end with "Renovation," it was only the middle step Ragland outlined. For it was not sufficient to just make the repairs, one also had to ensure that they were successful, which is what would take place during the "Validation" step wherein "systems are thoroughly tested—not only the fixes—regression test everything."[392] The final step was not to sigh deeply and go on a well-earned vacation, rather it was "Implementation" in which all of the changes were finally

[389] Ibid, xii.
[390] Ibid, 54-56.
[391] Ibid, 56-58.
[392] Ibid, 58.

loaded into the various systems at which point it would be possible to "run it with all its connections to its interfacing systems."[393]

In a somewhat amusing gloss on this five step process, Leon Kappelman and James Cappel placed those steps alongside the five stages of the Kubler-Ross scale.[394] Granted, rather than neatly map each stage of the Kubler-Ross onto one of the particular steps in the Y2K response, Kappelman and Cappel suggested that the "Awareness" stage of the Y2K project would involve a firm cycling through all five stages of the Kubler-Ross scale until that firm reached the acceptance stage, and it would only be then that it would be possible for the IT staff to get to work on the steps that would actually fix the problem. By highlighting that for IT professional management bringing up Y2K at their firms would move from denial to anger to bargaining to acceptance, Kappelman and Cappel sought to prepare people in the IT world for the expectation that they would need to overcome denial, likely endure some anger, wrestle with attempts to respond to the problem in a half sufficient way, before finally reaching a stage at which the firm would provide the necessary buy in that would allow for the work to proceed. And here Kappelman and Cappel encouraged IT professionals to remind management of "the rational origin of the problem," to emphasize that the original decision to truncate really had saved money in the past, and to try to navigate the bargaining stage by emphasizing that a successfully managed Y2K project would not only ward off this specific problem but could also put the company in a good position for responding to future challenges.[395]

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[393] Ibid.
[394] Leon Kappelman and James Cappel. "Overcoming Year 2000 Avoidance," in *Year 2000 Problem: Strategies and Solutions from the Fortune 100*, ed. Leon Kappelman (Boston: International Thomson Computer Press, 1997): 58-60. 58.
[395] Ibid, 60.

While the Y2K publishing boom consisted most predominantly of stacks of survival guides and other worrisome works, there were quite a few volumes that appeared that promised to guide companies large and small (from the actual IT staff through the management level) through the process of responding to Y2K. Books like the previously discussed ones by Ragland, Jones, and the one edited by Kappelman certainly take their places on this shelf of tomes, they were not the only volumes. There was even a volume in the popular "for dummies" book series that was specifically focused around "Year 2000 Solutions." These particular books varied depending on their specific target readership—some were clearly providing guidance to the CIO who might find themselves managing a Y2K project, while others featured page after page of dense technical details and code samples to be used by the programmers actually fixing the problem. These books provide a sobering counterpoint to the doom and gloom that often punctuated the media coverage of Y2K (which seemed to be perpetually stuck in the "awareness" stage), nevertheless these books still conveyed a clear case that the Y2K problem was a real issue, one that companies would need to solve, but one that could be solved provided the resources were marshalled to fix it. As time went on there were numerous specialty firms offering their services (often for a hefty fee) to come in and fix a company's Y2K related problems, and on a similar note there was also a steady flow of new software products being announced that promised to either do the work or at least make the work significantly easier.

Nevertheless, when it came to actually fixing the problematic code (this is a decision that would be made during the "Assessment" step and then actually executed during the "Renovation" step) there were a handful of strategies that could be used. The "preferred method" for responding to Y2K was "the physical fix" which would involve going "into the code and

actually replace all of the two-digit year fields with four-digit year fields."[396] While such a response might be "preferred," and even ideal, it was also one that was beyond the capabilities of many firms that worried they simply did not have time or resources for such a laborious fix. If the "physical fix" could not be executed, "the logical fix" provided a slightly easier approach, here a date would be picked and "then any two-digit year values that are less than that date assumed to be dates within the 21st century," this fix could be particularly useful for remediation in and around databases, granted this would require that everyone at the company "is conforming to the same rules."[397] The "sliding window" (often referred to simply as "windowing") was something of a version of the logical fix, which allowed "for more flexibility and ensures that you can go for a longer time before you run into a problem with your data algorithm" and in contrast to the basic logical fix, windowing achieved this by being "set up so that every year that value [the pivot point for the logical fix] will increase."[398] Granted, even as the logical fix and windowing could both help companies that were facing a major time crunch, neither of these represented "silver bullets"—rather they were techniques to help buy time.[399] The most likely approach would entail "using a combination of both the physical fix and the logical fix," as there would be places where there was simply no way of getting around the need for an actual physical fix, and also some systems that were of such importance that it would be too risky to rely on a workaround like a logical fix.[400] Picking which sort of solution to implement where was the sort of decision that could be reached during the Assessment phase (another reason that stage was so essential), and also involved trying to do some serious overall risk analysis: any system that

[396] Ragland, *The Year 2000 Problem Solver.* 70.
[397] Ibid, 70-71.
[398] Ibid, 71-72.
[399] Ibid, 72.
[400] Ibid.

would likely "abend" was one that would definitely require the "physical fix" but in the case of a database where the biggest risk was "garbage" the logical fix/windowing could be a useful option. Other responses, including data compression and the use of day counters also existed, though they were less reliable (and thus less likely to be encouraged) than the other solutions. Where time and resources permitted the ideal situation was clearly to rely on making the actual physical fix, where there simply was too much to do and not enough time or resources in which to work the logical fix/windowing could be a suitable solution, but in most cases some combination of the physical fix and the logical fix would be necessary as it allowed firms to prioritize mission critical systems.

In describing the number of function points, Jones had also drawn attention to the pool of programming labor available to do the work involved in fixing Y2K—and anxieties about the size of this labor pool were rife. As David Weldon discussed in the pages of *Computerworld*, drawing on the experiences of someone attempting to hire 10 COBOL programmers, "The bulk of their work isn't technically difficult, but…the older nature of the skill, combined with an extremely tight job market, made it costly and 'very difficult to find them'."[401] Where only a few years before Y2K reared its head, learning COBOL had seemed like something of a dead end, as companies raced to fix their Y2K issues "COBOL programmers are amongst the most sought-after information systems professionals."[402] And the chasm between the demand for programmers with skills in COBOL and the dearth of available programming talent created a situation where "corporate raiding" was a possibility as lucrative contracts could entice those

[401] David Weldon. "Deals of the Century for IS Careers," in *Year 2000 Problem: Strategies and Solutions from the Fortune 100*, ed. Leon Kappelman (Boston: International Thomson Computer Press, 1997): 183-186. 183.
[402] Ibid.

with the necessary programming skills to move to a higher paying firm.[403] Granted, as Jones's assessment of the variety of programming languages impacted made clear, it was not only programmers working in COBOL who were highly sought after—rather it was a moment in which those with the necessary skills could find themselves in an excellent bargaining position. Thus, Doyle Westbrook argued that in addition to companies having a plan for fixing their Y2K problems they would also need "to have specific plans in the areas of *retention, attraction,* and *satisfaction*."[404] And David Bettinger foregrounded the matter of compensation to not only draw attention to salaries, but also to the way that bonuses and other perks could encourage employees to stick around and keep them properly invested in meeting the various looming deadlines.[405] Alongside these problems of retaining programming talent was the growth of a Y2K "repair industry" that offered its services to companies strapped for time and personnel—with Jones noting "new organizations are entering the year 2000 market faster than almost any industry in human history."[406] While there were always risks involved in outsourcing, one particular wrinkle in this during Y2K was the amount of outsourcing that relied on non-US based workers. Jones explained this phenomena with reference to his mapping of the scale of the problem in different countries, with the US having by far the most systems that needed remediation, thus he noted "countries such as India, China, Russia, and the Ukraine will gain market shares [in the software industry] since they are not as greatly affected by year 2000 work and will have a substantial

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[403] Ibid, 184.
[404] Doyle Westbrook. "Employee Retention, Attraction, and Satisfaction," in *Year 2000 Problem: Strategies and Solutions from the Fortune 100*, ed. Leon Kappelman (Boston: International Thomson Computer Press, 1997): 187-190. 187.
[405] Dave Bettinger. "Compensation and the Year 2000 Problem," in *Year 2000 Problem: Strategies and Solutions from the Fortune 100*, ed. Leon Kappelman (Boston: International Thomson Computer Press, 1997): 191-195. 191.
[406] Capers Jones. "The Emergence of the Year 2000 Repair Industry," in *Year 2000 Problem: Strategies and Solutions from the Fortune 100*, ed. Leon Kappelman (Boston: International Thomson Computer Press, 1997): 206-209. 206.

surplus of software technical personnel while the United States enters a period of shortage."[407] And at a time when US based programmers were commanding high wages, employing the programming talent available overseas was a way for companies to secure the workers they needed at much lower pay rates.

As was fitting for a computer related problem, alongside the growth of the Y2K "repair sector" there were also numerous products that appeared that promised to help companies (and individuals) with streamlining their work process or in some more dubious cases promised to fix the problem entirely. Here once more, many professionals like Kappelman, Jones, and Rubin warned against the dangerous desire to search for "silver bullets" (a warning Peter de Jager had delivered in Congressional testimony). Yet there could be no denying that there were quite a few tools available, and that many companies would want to avail themselves of these as they went about making their Y2K repairs. Ragland's *The Year 2000 Problem Solver* featured an appendix consisting of dozens of available tools—though Ragland added the disclaimer that the list "by no means indicates recommendation of any of these services or vendors;"[408] while Kappelman's *Year 2000 Problem* ends with lengthy listings of consultants and vendors.[409] And though Zvegintzov had accused Y2K as being something of a racket, he also provided "A Resource Guide to Year 2000 Tools" in the pages of *Computer*.[410] Zvegintzov maintained his general critique of the hype surrounding Y2K—emphasizing "a Y2K project is basically a software maintenance project, one of verification and validation" and though there were plenty of unreliable tools that had appeared in this "heated atmosphere" there were also some that could be

[407] Jones, *The Year 2000 Software Problem,* 195.
[408] Ragland, *The Year 2000 Problem Solver*. 123.
[409] Anonymous. "Year 2000 Service Providers, Vendors, and Consultants," in *Year 2000 Problem: Strategies and Solutions from the Fortune 100*, ed. Leon Kappelman (Boston: International Thomson Computer Press, 1997): 413-427.
[410] Nicholas Zvegintzov. "A Resource Guide to Year 2000 Tools." *Computer* 30, Iss. 3 (March 1997): 58-63.

useful for the process of "maintenance…verification and validation."[411] Such tools ran the gamut from "inventory analysis" tools that would assist in the "surprisingly difficult" work of getting a handle on the scale of the problem, "project estimation" tools that would help a firm plan out the work it needed to do, as well as "analysis and conversion" tools which promised to help automate some of the laborious work involved in the "physical fix" and much else besides.[412]

Kappelman was clear, "The DRAGONs are everywhere," and "even if a DRAGON is not in the fire-breathing category, it can still cause pain if it steps on you."[413] Of course, "No one said it was going to be easy," but that did not mean it was impossible."[414] It would be necessary for would be DRAGONslayers to "identify and select strategies and weapons that fit your situation best" recognizing that "DRAGON-slaying armor is not 'one size fits all' but rather needs to be customized for the warrior in question."[415] Nevertheless, would be DRAGONslayers could see the weak spots in the DRAGONs scales, they could formulate a properly strategic plan of attack to bring down these beasts, they had a variety of allies available (even if some of them would demand mercenary wages), and the blacksmith was forging weapons and armor. It might be a "long and arduous march toward victory," but victory was the destination.[416]

At least they hoped victory would be the destination.

What to Expect?

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[411] Ibid, 58.
[412] Ibid.
[413] Anonymous. "Part Two: Solving the Year 2000 Problem—Slaying the Dragon," in *Year 2000 Problem: Strategies and Solutions from the Fortune 100*, ed. Leon Kappelman (Boston: International Thomson Computer Press, 1997): 55.
[414] Ibid.
[415] Ibid.
[416] Ibid.

At the June 2, 1998 conference held by the Center for Strategic and International Studies (CSIS) titled "The Y2K Crisis: A Global Ticking Time Bomb?", Howard Rubin and Bruce Webster found themselves tasked with providing the IT sector's perspective on Y2K.[417] The conference had featured a keynote address from Senator Robert Bennett (chair of the Senate's Special Committee on the Year 2000 Technology Problem); speakers had included Peter de Jager, Edward Yardeni (chief economist of Deutsche Morgan Grenfell), and Alan Simpson (President of Communications Links)—but Rubin and Webster alongside Keith Alan Rhodes (of the Government Accounting Office) were there in the role of discussants. Which promised to be a somewhat loaded task considering that de Jager and Yardeni were figures who tended to be associated with rather grim assessments of Y2K.

As the Chief Technical Officer of the Object Systems Group, Webster had the necessary technical bonafides but his particular authority to speak on matters connected to Y2K was connected to his being the organizer and chair of the Washington D.C. Year 2000 Group, the 1,000 plus members of which represented a cross-section of those who were working to tackle Y2K from a variety of sectors (including representatives from businesses and the government). Webster began his comments at the conference by describing himself as "an optimist" adding "I have to be, I'm a software engineer," while noting "only optimists build complex systems," Webster also acknowledged that in the case of Y2K it was precisely "complex systems that have gotten us into the current situation."[418] Webster rejected the idea that Y2K represented "a straight-forward problem" of the sort that simply required a solution of "go in, fix a few lines of

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[417] Arnaud de Borchgrave and Bradley D. Belt (co-chairs). *The Y2K Crisis: A Global Ticking Time Bomb?* Washington, D.C. June 2, 1998. The Center for Strategic and International Studies.

[418] Ibid.

code, recompile, retest and it's done," instead suggesting that the work of Y2K was revealing that the issue was more complicated.[419] Looking at Y2K, Webster framed it in terms of three challenges: the first being that systems did not "stand alone" but were instead networked and interacting with other systems; that Y2K was "not an IT problem" but "a human factors problem" one that had come about as the result of decisions made by people and one which was still being hindered by human decisions; and "that Y2K events do not occur neatly and isolatedly [sic], one by one, well bounded" leading Webster to warn of "Y2K event storms" and "chain reactions."[420] Webster had started by saying that to build complex systems required optimism, but he was also warning that "We can no longer control, predict or understand the complex systems which we rely upon day by day."[421]

Though Rubin did not begin his comments by describing himself as an optimist, his remarks established such a stance. While others at the conference, notably Yardeni and de Jager, had warned of the scale of the problem, Rubin took a somewhat different tack encouraging those gathered to think "Suppose the problem was fixed and you spent the money."[422] Drawing attention to the business side of Y2K, Rubin highlighted the need for risk management, and joked that in his own surveying of industry he had found that businesses' responses were "almost like a 'Three Little Pigs' scenario because people are doing various things to deal with risk mitigation."[423] And when it came to all of the work being done, and all of the risk mitigation, Rubin noted that a further problem was the question of who it was that was really accountable—and he argued that a good way to get a businesses' attention was to ask them who there would be

[419] Ibid.
[420] Ibid.
[421] Ibid.
[422] Ibid.
[423] Ibid.

held accountable, with a similar question being necessary to pose towards the government.[424] Of course, the question of what people would be held accountable for remained the question, and though Rubin had drawn attention to "Three Little Pigs" he moved towards another windy metaphor in saying "Imagine this is a big weather forecast and we're told there's going to be a series of storms and the big one is going to hit in 18 months. Well, there are going to be cells of tornadic activity that are going to blow—may blow companies away."[425] Webster, for his part, evoked a different sort of disaster in speaking of what Y2K might bring saying that it "may end up being not unlike a forest fire: not something you wish for, destructive possible [sic], painful possibly" though in keeping with his optimism he imagined "it will clear out a lot of undergrowth and deadwood."[426]

Granted, even as Rubin and Webster spoke of tornadoes and forest fires in their role as discussants from the IT world, they were still only providing the forecasts of a couple of individuals—but was it possible to provide a more cumulative perspective on what the IT sector was forecasting? And this is where Webster's experience as organizer and chair of the Washington D.C. Year 2000 Group (WDCY2K) provides particularly noteworthy information.[427] For it was not only that the group had a membership consisting of over a thousand people working on Y2K, but that the group had also surveyed its membership multiple times in order to gauge their expectations for what Y2K would bring—and these surveys remain a useful snapshot for capturing the varied opinions from within the IT sector about what to expect. And as the

[424] Ibid.
[425] Ibid.
[426] Ibid.
[427] Note: The decision to use WDCY2K as the acronym for The Washington DC Year 2000 Group as opposed to WDCY2G is based on the group's own material and naming conventions. The acronym the group used for itself was WDCY2K, and thus this work will use that acronym as well.

surveys failed to deliver a single predominantly shared assessment, they demonstrate that even within the IT sector there was a fair amount of uncertainty surrounding Y2K.

Testifying at a hearing in the House of Representatives, titled "Year 2000: Biggest Problems and Proposed Solutions," a couple of weeks after the CSIS conference, Webster highlighted for the committee that the IT sector remained concerned.[428] In his testimony, Webster drew the committee's attention to an "unpleasant truth" that had emerged surrounding the development of information technology, namely, "Virtually every information technology project of a certain size or complexity is significantly late and over budget or fails altogether" and to this he added that even "Those that don't fail are often riddled with defects and difficult to enhance."[429] A comment that seemed to tamp down any enthusiasm about all of the progress being made. Echoing some of his commentary from the CSIS event, Webster did not place the blame for this on anything specific about information technology, but instead attributed the problem to "human frailties" noting that if one needed an explanation "one could simply cite the seven deadly sins."[430] Taking on Y2K thus required four "Rs" in Webster's assessment: "Recognize" (a clear, honest, public acknowledgment of the problem), "Resolve" (emphasize the need to "pull together" in order to face whatever disruptions Y2K might bring), "Repair" (actually do the work of fixing Y2K related problems), and "Refrain" (resist the urge to engage in costly Y2K litigation that would make solving the problem more difficult).[431]

In making these comments, Webster contrasted Y2K from "most scientific disputes," noting that unlike "global warming" when it came to Y2K "there are few ideological overtures,"

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[428] U.S. Congress. House. Hearing before the Subcommittee on Government Management, Information, and Technology of the Committee of the Committee on Government Reform and Oversight. *Year 2000: Biggest Problems and Proposed Solutions.* 105th Cong., 2nd sess., June 22, 1998.
[429] Ibid, 68.
[430] Ibid.
[431] Ibid, 71-72.

instead with Y2K "the reality of the problem is trivial to prove, the consequences are sure and soon, and it is the most technical, informed, and involved practitioners who are most worried."[432] Significantly, Webster's reference to "the most technical, informed, and involved practitioners" was not a matter of speculation but a reflection of the two surveys that the WDCY2K group had conducted of its members in March and May of 1998 which asked for "their projections of the Year 2000 impact in the United States."[433] And as Webster told the committee "Both surveys yielded the same results" with "two-thirds" of the respondents predicting "there will be at least an economic slowdown," another "third" anticipating "a strong recession and regional infrastructure failures," and "a tenth foresaw a second Great depression or worse."[434] And lest such grim figures be blamed solely on "those who might stand to profit from such concerns," Webster added that once such people "were factored out, the results remained largely the same."[435]

Webster's short summary before the committee of the survey results provided a fair glimpse of the responses, yet the actual survey responses provided a more nuanced assessment as it allowed the respondents a wide spectrum along which to place their responses.[436] The surveys were distributed via email to the WDCY2K's notification list, asking them "what they thought the impact of the Year 2000 problem would be within the United States."[437] In addition to providing a numeric rating, the survey also asked participants to categorize themselves based on

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[432] Ibid, 71.
[433] Ibid.
[434] Ibid.
[435] Ibid.
[436] Bruce F. Webster. *The Y2K Survival Guide: Getting to, Getting Through, and Getting Past the Year 2000 Problem.* (Upper Saddle River: Prentice Hall PTR, 1999). Note: the two 1998 surveys (along with commentary, and survey responses) are included as Appendix B (399-480) in Webster's *The Y2K Survival Guide*. The information published in the Appendix is more thorough than what was published elsewhere (such as on the organization's website), a point that Webster himself notes in introducing the Appendix.
[437] Ibid, 400.

the field ("corporate/business; government; military;" etc…) in which they worked.[438] Respondents were also able to provide short comments in which they could explain the rationale for their answer. The numeric scale that respondents were asked to use consisted of 11 points, from 0 to 10—with 0 representing "No real impact" while 10 stood for "Collapse of U.S. government; possible famine."[439] And this scale was adapted from a table of possible results that Capers Jones had laid out.[440] There were plenty of steps ranging between 0 and 10 which captures situations such as 1 "Local impact for some enterprises" to 4 "Economic slowdown" to 6 "Strong recession" to 8 "Depression" with the added point that each of the levels "comprises all the previous ones, so that impact level 5 includes the consequences of levels 1-4 as well."[441] Of the 229 responses to the March 1998 survey, the average score was a 4.8 (somewhere just below "Mild recession; isolated supply/infrastructure problems; runs on banks")—and while there were very few people predicting the scenario would be as bad as a 10, there were quite a few respondents clustered between 6 and 7.[442] The results from the May survey did not "show any dramatic shifts," with the average of the 283 responses still holding steady at a 4.8—in the May survey there were no responses of 10, but the single category that received the largest number of responses (70 out of 283) was 5, with more people predicting a 7 (36 out of 283) than anticipating a 2 (32 out of 283).[443]

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[438] Ibid, 400-401.
[439] Ibid, 401.
[440] Ibid, 410.
[441] Ibid, 401. A full listing of the scenarios is as follows: "0: No real impact. 1: Local impact for some enterprises. 2: Significant impact for many enterprises. 3: Significant market adjustment (20%+ drop); some bankruptcies. 4: Economic slowdown; rise in unemployment; isolated social incidents. 5: Mild recession; isolated supply/infrastructure problems; runs on banks. 6: Strong recession; local social disruptions; many bankruptcies. 7: Political crises; regional supply/infrastructure problems and social disruptions. 8: Depression; infrastructure crippled; markets collapse; local martial law. 9: Supply/infrastructure collapse; widespread social disruptions and martial law. 10: Collapse of U.S. government; possible famine."
[442] Ibid, 403.
[443] Ibid, 404.

In assessing these survey results, Webster included the "caveat" that "Polls and survey do not establish facts, predict the future, or fix probabilities."[444] Nevertheless he emphasized that what made the survey responses significant is that the respondents were those who "for the most part work on or deal with the Year 2000 issue day in and day out in a wide range of organizations, settings, and levels" meaning that these "respondents probably know as much or more about the realities of the Year 2000 situation than any other group of people one could assemble."[445] Which was certainly a less than reassuring way to describe survey results for which the average response was something slightly less than a "Mild recession" – especially considering that even as there were some who were predicting much better, there were also those predicting significantly worse. The breakdown within the survey responses based on the fields from which respondents came also provided some further reason for discomfort while also challenging what might have been easily suspected; for between the two surveys "Vendors of Y2K products and services, as well as lawyers" were groups that "declined in their overall estimates" contradicting the belief "that those who stand to profit from Y2K are those who are most pessimistic."[446] With the title of "The single most pessimistic group" being bestowed upon "those involved in government work of some kind."[447]

Beyond providing numerical responses, the members of the WDCY2K group that participated in the survey were also able to provide brief explanatory responses. Anonymous beyond reporting the type of organization with which a particular respondent was affiliated, these responses ran the gamut as would be expected considering the range of opinions given for what

[444] Ibid, 408.
[445] Ibid, 409.
[446] Ibid, 408.
[447] Ibid.

would happen.[448] The responses featured a fair amount of commentary that suggests a certain dark sense of humor even considering the seriousness of the topic, thus one consultant who replied with a 3 noted "Here it is. Hope I'm wrong!"[449] while a military respondent who answered with a 4 noted "I hope 4 is the worst."[450] and a corporate respondent who selected 8 wryly asked "How do you declare martial law when the military systems also fail?"[451] Some made direct allusions to other disasters with a consultant who had selected 3 stating "Remember the Titanic!"[452] even as a corporate respondent who also selected 3 warned "The outcome might be a bit like the great flood."[453] a consultant who selected a 7 noted "We are facing the greatest crisis to worldwide public safety since the Cuban missile crisis and no one seems concerned."[454] and one of the government respondents who selected a 9 bemoaned "lies and half truths on this issue in the government agency I worked as a contractor for until recently" adding "This is going to be a disaster."[455]

This matter of appropriate concern was something else that clearly garnered strong responses from those responding, a corporate respondent who selected a 7 noted "Still not enough attention and urgency and explanation of problem breadth to average citizen" going on to grouse that "Clinton is worried about his legacy" before adding that Clinton's "lack of leadership to this problem may well become his long-term legacy."[456] while a consultant who had selected a 2 gave credit to those who had successfully sounded the alarm noting, "Had not attention been

[448] Ibid, 413-480.
[449] Ibid, 424.
[450] Ibid, 428.
[451] Ibid, 468.
[452] Ibid, 420.
[453] Ibid, 421.
[454] Ibid, 458.
[455] Ibid, 474.
[456] Ibid, 463.

drawn to this matter, I think the results would have been much more severe."[457] There was some concern regarding what Y2K would mean for the IT profession and for the public perception of information technology more broadly, with a consultant who had picked a 6 suggesting "In the aftermath, do not be surprised at a new wave of Luddism, a reaction to the technology and technologists who will be blamed for these disasters."[458] while a vendor who had picked a 1 commented "Y2K can be a catalyst for maturing information technology support…The industry can take advantage of the current popular and funding support to address serious infrastructure weaknesses."[459] At one extreme were those like a consultant who picked a 9 and stated "Without a dramatic (exponential) increase in action on the part of business and government the outlook is not good."[460] while at the other extreme a consultant who picked a 0 argued "This issue has become the focus for free-floating anxieties relating to software (and perhaps the millennium). There are still VERY few facts chasing MUCH speculation."[461] And for his part, Webster noted that 3 "reflects the most commonly held opinion of what Y2K will bring and represents the most probable optimistic outcome,"[462] he treated 0 as "nearly as improbable as Level 10,"[463] and he framed 2 as "probably the best result we can hope for."[464]

Eight months elapsed between the WDCY2K's second and third surveys, far more time than passed between the first and second surveys, and the period in question (the latter half of 1998 into the start of 1999) ostensibly covered a window where a dramatic amount of work was taking place. Nevertheless, of the more than 340 responses that came back for the February 1999

[457] Ibid, 418.
[458] Ibid, 447.
[459] Ibid, 415.
[460] Ibid, 476.
[461] Ibid, 414.
[462] Ibid, 337.
[463] Ibid, 331.
[464] Ibid, 335.

survey (337 of which were deemed usable), the picture remained quite mixed.[465] As *USA Today* put it, in an article headlined "Survey: 45% of experts worried," with less than a year remaining "nearly half the experts grappling with the Y2K computer problem remain deeply concerned, according to a unique survey."[466] Summarizing the results on the WDCY2K website, Webster noted that around a third thought Y2K would "have no impact on the economy" while two thirds believed "The impact will be more significant" with "A large minority, 45%," projecting "the impact as including at least a mild recession and rising unemployment."[467] A clear majority (57%) predicted that businesses would survive "with no more than some bumps and bruises," though there was "Significant pessimism" when it came to the state of infrastructure with 80% predicting "At least one regional brownout/blackout."[468] Minds were clearly divided about how prepared the US government would be with the respondents fairly even spread out between those imaging the government "will be fine," those expecting "the government will have tremendous problems and upheaval" though a majority seemed to think "some government agencies will have significant problems but will muddle through somehow."[469] Nevertheless, "An overwhelming majority felt that most Americans would handle whatever Y2K throw at us—and that, ultimately, will decide how well we get through everything."[470] The USA Today article quoted Webster as saying that "About 45% think it's going to be a bump in the road, and about

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[465] Bruce Webster. "Washington D.C. Year 2000 Group Survey Results." *The Washington D.C. Year 2000 Group* (http://wdcy2k.org/survey/: June 10, 1999); archived at *Wayback Machine* (http://web.archive.org/web/19991011042810/http://wdcy2k.org/survey/).
[466] M.J. Zuckerman. "Survey: 45% of Y2K Experts Worried." *USA Today.* (https://usatoday30.usatoday.com/life/cyber/tech/ctf361.htm: June 10, 1999).
[467] Webster. "Washington D.C. Year 2000 Group Survey Results." *The Washington D.C. Year 2000 Group*.
[468] Ibid.
[469] Ibid.
[470] Ibid.

45% think it's going to have significant impact…And about 10% think it's going to be the end of the world as we know it."[471]

The public may have not known exactly what to expect when 1999 became 2000, but as the WDCY2K survey results demonstrate, even amongst "the most technical, informed, and involved practitioners" there were a range of forecasts.

The Warning from Inside the Building

There were no names present in the WDCY2K survey, and though the cloak of anonymity may have provided some respondents with the freedom to reply truly honestly, it also meant that no single answer was more obviously credible than another. Certainly, there were some respondents who were forecasting that things would go very badly—and the average score of a 4.8 was hardly a positive outlook—but there were also plenty of respondents clustered at the very low end of the spectrum. While the survey could allow for an observation that opinions were divided within the IT sector, it did not feature a well-regarded figure within the IT community willing to put their reputation on the line in order to express a foreboding view.

However, even before the first WDCY2K survey was conducted, the role of prominent IT figure turned prominent Y2K pessimist had already been filled by Edward Yourdon.

Yourdon's biography, as summarized in the pages of *IEEE Software*, makes his IT bonafides clear: developer of the aptly named "Yourdon method of structured systems analysis," designer of "the Coad/Yourdon method of object-oriented analysis and design," he was an editor on two software journals *American Programmer* and *Application Development*, was a member of

[471] Zuckerman. "Survey: 45% of Y2K Experts Worried." *USA Today.*

the Department of Defense's Airlie Council, and was chair and co-founder of the Cutter Consortium.[472] Beyond this he was the advisor of a book series from Prentice Hall PTR, the also aptly titled, "Yourdon Press Computing Series." This was a book series that had published numerous technical titles from Yourdon and others including Capers Jones's *Assessment and Control of Software Risks*, Tom DeMarco's *Controlling Software Projects*, Leon Starr's *How to Build Shlaer-Mellor Object Models*, and many others. As for Yourdon's own books that appeared in the series, these included works with titles like *Object-Oriented Systems Design, Modern Structured Analysis,* both the *Decline and Fall* and *Rise and Resurrection of the American Programmer,* and many others including a book he co-authored with his daughter, Jennifer Yourdon, titled *Time Bomb 2000.* Throughout the years of the Y2K crisis, Yourdon was not just a prominent voice on Y2K, but a noteworthy pessimistic voice—and what set him apart importantly from many other figures in the IT community is that much of his messaging was directed to those outside the IT community. *Time Bomb 2000* achieved best-seller status (originally published in 1997, it was then followed up with a "revised and updated" version in 1998), and Yourdon also coauthored *The Complete Y2K Home Preparation Guide* and *The Y2K Financial Survival Guide*. Alongside these volumes Yourdon was one of the many IT figures who appeared before Congress—though his testimony was at a hearing specifically on informing the public—and while he continually made his assessments available on his website, he also maintained his connection to the IT world through articles in IEEE publications and a monthly column on Y2K (that ran from 1998 until January 2000) that was published in *Computerworld*.

Testifying before the Senate's Special Committee on the Year 2000 Technology Problem on May 25, 1999, at a hearing titled "Community Y2K Preparedness: Is There News They Can

[472] Ed Yourdon. "A Tale of Two Futures." *IEEE Software* 15, Iss. 1 (January-February 1998): 23-29. 29.

Use," Yourdon started his comments by pointing to his qualifications within the IT world, but his testimony was not confined to a bland recitation of technical details.[473] As he described his position to the Senate Committee, "while my background in computers may have given me a greater-than-average understanding of the technological aspects of the Y2K problem, it's my role as a family member and a community member that have shaped my opinions about the issue of preparedness."[474] In his remarks before the Senate, Yourdon made no definitive prediction as to exactly what would happen, acknowledging "the debates and discussions will continue until we finally discover what Y2K is really all about," yet his commentary also provided a fairly glum counter to some of the more optimistic assessments that were starting to be made by May of 1999.[475] Drawing on his ample experience in the computing world, Yourdon highlighted how unusual it was for IT projects to be completed by their deadlines (especially when those projects were very large and complex), and he expressed skepticism towards some of the positive reports that were being issued by companies that were not independently verified or audited. Core to Yourdon's testimony was pushing the Senate Committee for more and better information, and for that information to be made publicly accessible—and though such a request was not dissimilar from what was being asked for by others who testified that day,[476] what set Yourdon apart was the way he had described himself at the hearing's start and his statement that his

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[473] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Community Preparedness: Is There News They Can Use?* 106th Cong., 1st sess., May 25, 1999. Please note: the transcript of this hearing was not available; however, the components of it had been uploaded as pdfs to the Senate Special Committee's website (http://www.senate.gov/~y2k/hearings/990525/); archived at *Wayback Machine* (http://web.archive.org/web/20000925123643/http://www.senate.gov/~y2k/hearings/990525/). Edward Yourdon's testimony is available there at (http://www.senate.gov/~y2k/hearings/990525/eyourdon.htm: May 25, 1999); archived at *Wayback Machine* (http://web.archive.org/web/20000823175722/http://www.senate.gov/~y2k/hearings/990525/eyourdon.htm).
[474] Ibid.
[475] Ibid.
[476] More testimony from this day is further discussed in the fifth chapter of this dissertation.

"background in computers" gave him "a greater-than-average understanding of the technological aspects of the Y2K problem."[477]

This authoritative perspective is precisely what sets *Time Bomb 2000* apart from the numerous other public-facing books about Y2K that were published in the closing years of the twentieth century. As Yourdon's stellar computing résumé established him as a person with the necessary technical background to be able to speak knowledgeably about Y2K, while this exact same knowledge also helped to further heighten the seriousness of his alarm sounding. For *Time Bomb 2000* made it possible to say that concern about Y2K was not isolated to a non-technical apocalyptic fringe, but that such worries were shared by prominent figures (or at least a prominent figure) within the IT world. In the preface to the first edition of *Time Bomb 2000* the Yourdons[478] noted that "hundreds of technical articles have already been published in computer journals, and dozens of computer conferences have been held to offer advice to computer professionals and managers" while also highlighting how the issue had received coverage in numerous well respected mainstream publications.[479] But as the Yourdons made clear their book was "not aimed at computer professionals, even though that's the area in which one of the authors makes his living," rather their book was "aimed at computer users…all the millions of people who *use* computers without really understanding or caring about how they work."[480] In other words, *Time Bomb 2000* promised to take the technical expertise of someone who was knowledgeable about all those "technical articles" and translate it for the larger lay public of

[477] Ibid.
[478] Note: when discussing the contents of *Time Bomb 2000* I will refer not to Yourdon (meaning Ed Yourdon), but Yourdons (meaning Ed Yourdon and Jennifer Yourdon). This is because the two co-authored *Time Bomb 2000*, hopefully this will also help distinguish between the discussions of those books and the various other articles wherein Ed Yourdon was the single author.
[479] Edward Yourdon and Jennifer Yourdon. *Time Bomb 2000: What the Year 2000 Computer Crisis Means to You!* (Upper Saddle River: Prentice Hall PTR, 1997). xvii.
[480] Ibid.

computer users. In contrast to the technical manuals that told IT workers what they needed to do to fix the problem, *Time Bomb 2000* "asks the question: *What if the computer industry doesn't manage to fix the Year-2000 problem successfully?*"[481] And, as the preface to the revised, updated, and expanded, second edition of the book made clear, this was a question worth seriously contemplating considering how "The concerns about Y2000 that we expressed when we wrote the first edition of our book in 1997 have been validated and supported by a growing number of conservative, reputable politicians, industry officials and corporate executives…the subject should not be casually dismissed as an alarmist exaggeration" – and of course beyond those "politicians…officials…and…executives" was Yourdon's own reputable voice from within the IT community.[482]

Time Bomb 2000 focused on the potential impacts of Y2K as they would hit everything from jobs to utilities to banking/finance to home PCs to government to the rest of the world—with the wide-ranging list of areas that would potentially be impacted making it clear that this would hardly be an isolated problem. While evoking familiar sorts of disasters like "normal hurricanes and blizzards," the Yourdons emphasized that Y2K was "unlike" such familiar hazards in that "we can anticipate *when* the problem will begin occurring" though they added that "we don't know whether it will be the equivalent of a Force-5 hurricane or a mild spring breeze."[483] Given the certainty about the problem but the comparative uncertainty regarding what its effects would be, the Yourdons focused on the need for a "risk management" approach that

[481] Ibid.
[482] Edward Yourdon and Jennifer Yourdon. *Time Bomb 2000: What the Year 2000 Computer Crisis Means to You! 2nd Edition.* (Upper Saddle River: Prentice Hall PTR, 1998). Xxi.
[483] Ibid, 2.

would identify, evaluate, monitor, and proactively plan for potential issues.[484] In the book the Yourdons were a bit hesitant to make a definitive prediction about what would happen, they noted "that the 'non-event' scenario is relatively unlikely" and highlighted the need to consider scenarios falling between "the two extremes,"[485] instead of telling readers "how optimistic or pessimistic" they "should be" the Yourdons staked out their position as providing "as much information as possible" to enable readers "to make an informed judgement."[486] Granted the information that the Yourdons provided, which derived extra credibility from Ed's background, was consistently cast with a fairly pessimistic connotation, that may have encouraged readers to make their own assessments but still suggested that the proper assessment was a glum one. While the Yourdons observed that most Y2K disruptions would be of the minor sort that would last a couple of days, they also suggested that quite a few could last for a month, or have consequences that would last a year, and they did not shy away from predicting that some might even "*take a decade to resolve*."[487] Nevertheless, the Yourdons stated that even if their worst predictions were accurate "it won't be the end of Western civilization," and in a prescient moment observed that if nothing major were to happen they might wind up being "accused of behaving like the boy who cried 'Wolf!' in the fairy tale" and though they admitted such a scenario "will be deeply embarrassing to us" they saw it as a "small price to pay" for sounding the alarm.[488] The assessment underlying *Time Bomb 2000* was of the risks posed by Y2K, but the existence of these risks was a testament to the way "most of us are addicted to the comforts of our high-tech, computer supported lives in today's world," and it would be wise to slowly break from that

[484] Ibid, 4-9.
[485] Ibid, xx.
[486] Ibid, xxv.
[487] Ibid, 19-23.
[488] Ibid, 16.

addiction before a sudden disaster forced people to go cold turkey.[489] Considering the risks of complacency, the Yourdons concluded their book by stating plainly "we believe that it's better to be terrified now and take appropriate actions, even if it turns out that the Y2000 problems are no worse than a few mosquito bites."[490]

While the message to the non-technical readership was one of "better to be terrified," Yourdon's pivot towards writing for a more popular audience did not mean that he had stopped writing for the IT community. And in writing about Y2K for a readership of colleagues who, ostensibly also understood the technical side of Y2K, Yourdon did not particularly soften the tone of his outlook. Though in speaking to fellow IT workers, Yourdon did recognize that these were people engaged in doing the work of trying to minimize the potential impacts, as opposed to those whose preparedness activities were unlikely to involve anything comparable to actually fixing a computer. In his earlier books *Decline and Fall of the American Programmer* and *Rise and Resurrection of the American Programmer*, Yourdon had discussed the state (and future) of the programming profession and at the start of 1998 he provided something of a Y2K addendum to those earlier books in the pages of *IEEE Software*. Under the title of "A Tale of Two Futures," Yourdon juxtaposed the hope that the years ahead would be "exciting" and "lucrative" for programmers with the possibility "that the impending Year 2000 crisis may plunge us all into several years of decidedly unpleasant times."[491] For the optimistic assessment of the brighter future, it was possible to point to things like the steady march of Moore's Law as well as the rapidity with which the Internet was catching on, and even if there was a risk that at some point there could be too many programmers, Yourdon observed "it's hard to deny that our employment

[489] Ibid, 516.
[490] Ibid, 520.
[491] Yourdon. "A Tale of Two Futures." 23.

prospects look bright at the moment."[492] Yet Yourdon also delivered some harsh words, bemoaning how "We have indeed gotten away with more-or-less sloppy software development for a long time," and that even as companies came to be ever more reliant on their IT departments, many of those same companies were likely starting to wonder if to "maintain their IT systems greatly exceeds its identifiable benefits."[493] While much of the contrast that Yourdon drew out is an almost evergreen assessment of challenges and debates within the world of IT, Yourdon argued that Y2K would help determine which trajectory the programming field would be locked into. Yourdon plainly stated "I believe Y2K is a real and serious problem" and he highlighted that "what matters" would be for "senior IT management" to take the problem seriously enough as to secure "the staggering" amount of resources that would be necessary to fix the problem.[494] And here Yourdon pushed *IEEE Software's* readership, to seriously consider their own experience and ask themselves "When is the last time you saw a large, complex project—with a deadline imposed by fiat—that finished on time?"[495] And he wondered which IT managers or programming professionals wanted to be the ones who would have to walk into the CEO's office, or the oval office, and have to say that the repairs would not be done in time. As computer professionals found themselves forced to triage and make contingency plans, Yourdon wondered if programmers would be blamed for anything that went wrong, and suggested that the whole affair could significantly harm the image of the programming profession.

Yourdon made observations of a similar sort, also directed at technical professionals, throughout the final years of the 1990s—as he had a monthly column in *Computerworld* that

[492] Ibid, 24.
[493] Ibid, 25.
[494] Ibid, 26.
[495] Ibid.

provided him with the space to continually sound the alarm.[496] And over the course of these columns, as January 2000 grew steadily closer, Yourdon's outlook remained fairly grim. In February of 1998, Yourdon was warning that the optimistic assessments coming out of most IT organizations "have no basis" and was arguing "it would be better for everyone if you stopped kidding yourself."[497] By June of that year, Yourdon was encouraging IT workers to make sure they had talked to their company's lawyers and that all of their work was carefully documented, so that they would be ready "when your company is sued. Note that I didn't say *if* your company is sued" for damages related to Y2K disruptions."[498] And Yourdon closed out 1998, by ruminating on the IEEE and ACM's codes of ethics while drolly observing "if we computing professionals had insisted on following this code of ethics, we might have avoided the Y2K problem altogether."[499] And 1999, saw Yourdon maintaining his wary position, urging *Computerworld's* readers to keep getting the work done, while noting that many companies were already experiencing various problems.[500] Though time was certainly running out, Yourdon was clear that there was still time to make a difference, and he emphasized that being Y2K compliant would provide a competitive advantage to the companies that were ready—and if a company wasn't ready, it would likely lose out to a competitor that was.[501] He highlighted the need for contingency planning, warned that data corruption (Kappelman's aforementioned "garbage") could still pose a significant if largely silent danger, and worried that government legislation to ease the threat of legal liability would just result in many companies deciding they no longer

[496] Note: Yourdon's Y2K *Computerworld* columns were also posted on his website (http://www.yourdon.com/); archived at *Wayback Machine* (http://web.archive.org/web/20000511102531/http://www.yourdon.com/). They appeared there with slightly different titles, and often with slightly different text.
[497] Ed Yourdon. "Y2K: Where is the Basis for Optimism?" *Computerworld* 32, No. 7 (February 16, 1998): 68.
[498] Ed Yourdon. "Don't Shoot the Y2K Lawyers." *Computerworld* 32, No. 25. (June 22, 1998): 68.
[499] Ed Yourdon. "The Moral Dimension of Y2K." *Computerworld* 32, No. 50 (December 14, 1998): 76.
[500] Ed Yourdon. "Now's the time to size up Y2K task." *Computerworld* 33, No. (January 18, 1999): 45.
[501] Ed Yourdon. "Getting a Y2K edge on the competition." *Computerworld* 33, No. 11. (March 15, 1999): 52.

needed to complete the work.[502] And as the minute hand on the "Time Bomb 2000" ticked closer and closer to midnight, Yourdon praised the whistleblowers who were coming forward, and begged his fellow IT workers to be prepared, using every moment available to them, as opposed to just sitting back and waiting.[503]

As Yourdon commented in wondering which future Y2K would bring for the IT community: "how we transcend the Y2K crisis will determine to a great extent whether our industry finds the first years of the 21st century to be the best of times…or the worst."[504]

Conclusion

The headline in *IEEE Computer* captured the essence of the IT sector, and the broader society's, response quite succinctly: "Y2K Rollover: Few Problems, Many Questions."[505] Though the single page article did feature a side bar acknowledging several Y2K related incidents that did occur (while providing the link to a government website with a more comprehensive list), that this list was consigned to a side bar and that the article itself was so short used a small amount of space to make a larger point about what had, and hadn't happened. The article noted that "Many technology experts say this is a victory for Y2K remediation efforts," while also noting that "some observers question whether exaggeration of Y2K risks

[502] Ed Yourdon. "Y2K legislation and you." *Computerworld* 33, No. 25. (June 21, 1999): 60; Ed Yourdon. "Strategic Y2K planning." *Computerworld* 33, No. 29. (July 19, 1999): 46; "Y2K's nastiest work." *Computerworld* 33, No. 33. (August 16, 1999): 44; Ed Yourdon. "Data Corruption the Silent Y2K Killer." *Computerworld* 33, No. 42 (October 18, 1999): 44.
[503] Ed Yourdon. "Y2K Whistleblowers." *Computerworld* 33, No. 46 (November 15, 1999): 62; Ed Yourdon. "Post-Y2K Proactive." *Computerworld* 33, No. 51 (December 20, 1999): 39.
[504] Ed Yourdon. "A Tale of Two Futures." 29. Note: the "…" is in the original text.
[505] Lear, Anne. "Y2K Rollover: Few Problems, Many Questions." *IEEE Computer* 33, No. 2 (February 2000): 22.

caused organizations around the world to overspend on remediation."[506] John Koskinen, who President Clinton had made chair of the US Council on Year 2000 Conversion, was noted as being amongst those arguing that the risk had not been exaggerated with the malfunctions that did occur standing as evidence that worse could have happened had the remediation efforts not been undertaken, as Koskinen put it "If we still have minor problems after all that effort…imagine what the risks would be if we hadn't done the work."[507] And beyond Koskinen, some like David Thielen "a veteran software developer," suggested that the news about scattered issues "is not the whole story…In fact, there were a lot of Y2K bugs" with Thielen claiming that "many programmers he knows were busy with Y2K Problems in the first business days of 2000.[508]

A few months into the year 2000, Leon Kappelman took to the pages of *IEEE Software* in order to opine on "Some Strategic Y2K Blessings."[509] For the most part, the DRAGONs had been slain, but instead of being praised by the lightly singed villagers for their heroic efforts in defeating the beasts, the DRAGONslayers now found themselves having to justify their efforts. Many of those who had been expecting fire-breathing monsters would lay waste to everything with a microchip, almost seemed a bit disappointed by the mostly smokeless skies that ushered in the year 2000. And while Kappelman sought to emphasize "blessings" that could be attributed to Y2K, in doing so he no longer spoke of Y2K in terms of DRAGONs.

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[506] Ibid.
[507] Ibid.
[508] Ibid.
[509] Leon Kappelman. "Some Strategic Y2K Blessings." *IEEE Software* 17, Iss. 2 (March/April 2000): 42-46.

Instead, Kappelman noted that "The positive side is that Y2K showed everyone the importance of systems and software in enterprise success."[510] At least for the organizations "that did it right" a "huge silver lining" of Y2K was that they emerged from the crisis "with a solid understanding of the workings and value of their information systems." This view, that Y2K would force companies to get a handle on their unruly IT systems, was a positive side effect of Y2K that had been touted earlier in the crisis—as Capers Jones had observed that making systems Y2K "compliant" would in turn make them "easier to extend and maintain than their predecessors" and that the work involved in facing down Y2K would "give enterprises a much better understanding of how much software they own, and its business value, than has yet been possible."[511] Granted, Kappelman was not simply interested in arguing that working on Y2K had delivered a handful of side benefits, he was also committed to highlighting that Y2K had been a real "mess" that required cleaning up—and Kappelman stated that "The century ended with the greatest technological housecleaning of all time."[512] While considering the considerable financial expenditures that had gone into Y2K, and the amount of companies' IT budgets that had been devoted to the process, Kappelman framed this work as "an enormously extensive and expensive upgrade of the world's systems and software assets," and by framing this not simply as "remediation" but as an "upgrade" Kappelman was able to cast this spending not as an attempt to correct a costly problem from the past, but as an investment companies were making for their future. Looking for further "blessings," Kappelman treated Y2K as an experience to be learned from, and framed "the uncommonly high levels of successful Y2K projects" as a demonstration

[510] Ibid, 42.
[511] Jones *The Year 2000 Software Problem.* 2.
[512] Kappelman. "Some Strategic Y2K Blessings." 43.

"that IT standards have strategic and technical importance."[513] Of course, some of the lessons to be learned also required a harder look at the overall Y2K crisis, as it "was merely a symptom of the underlying quality and management problems in the software world," issues of software maintenance, waste, the number of software projects that fail, and the challenges of managing IT departments and IT projects were all major issues—and it remained "to be seen" the extent to which "Y2K will be the catalyst" for changes in those areas.[514] That Y2K had been largely managed, did not mean that in the process of fixing Y2K, IT departments had fixed all of the problems that ailed them, yet Kappelman still observed that "As a result of Y2K, executives have more insight into and a better understanding of their information systems, and the importance of their IT professionals to the overall enterprise."[515] Granted, the question was how such executives would now apply that expensive understanding.

For his part, Howard Rubin seemed to suggest that such knowledge might be easily forgotten. After all, the world of companies and their IT departments was one focused on moving constantly forward, and as soon as January 2000 had arrived without catastrophe, the focus became not about looking back but about moving ahead. Thus Rubin praised the efforts of those who had combated Y2K, noting "your department's heroics during the past year have saved your company a small fortune, kept pace with accelerating technology and relentless competition, and blazed the way into new business arenas," but also acknowledged that "Now that the massive expenditures on Y2K fixes have subsided, many organizations are striving to reduce IT

[513] Ibid.
[514] Ibid, 45.
[515] Ibid, 46.

expenditures."[516] On the one hand, Y2K had made it abundantly clear how central well-functioning IT resources were to a company's health, yet Rubin was also observing that IT budgets were growing comparatively "slowly" and that control of those budgets was "slipping form IT management's control."[517] Similarly to Kappelman, Rubin highlighted the overall benefits of Y2K efforts—which had "resulted in application portfolios being rejuvenated and restructured"—while also suggesting that many companies were seeing all of this more as a strange fluke than as a fundamental revelation about the importance of IT.[518] The gulf between those managing IT and those at the upper levels of management remained, and "In most organizations, upper management views the IT department as a cost center," a problem that had largely been exacerbated by "upper management" having been made so aware of how much funding Y2K had consumed.[519]

Kappelman and Rubin had both been writing and speaking about Y2K for some time, and both had clearly associated their names and their reputations with the matter, but their responses to Y2K were fairly representative of the IT community's response to the aftermath of Y2K. A massive sense of relief, a desire to move on to the next exciting project, and a desire to be acknowledged for all of the work that had been done while also wanting to not dwell for too long on the extent to which all of that work had needed to be done as a result of choices (albeit ones made decades ago) by members of the IT community. This blend could be seen quite clearly in a piece titled "Fresh from Y2K, What's Next for Cobol?" in which Edmund Arranga and Wilson Price sought to praise their fellow IT colleagues who had responded to Y2K, while keeping the

[516] Howard Rubin. "Bolster Your Budget Proposals with IT Market Basket Statistics." *IT Pro* 2, Iss. 3 (May/June 2000): 51-54. 51.
[517] Ibid.
[518] Ibid.
[519] Ibid.

focus on the challenges ahead.[520] As they put it "Y2K presented a formidable (albeit well-defined challenge," but "Post-Y2K presents a more formidable challenge: a set of issues more complex, less well defined, with solutions more resistant to prescription."[521] They argued that "Y2K clearly illustrated the extent to which IT still relies on Cobol" and highlighted that Y2K provide an answer to the question "Where are we now?" in terms of the omnipresence of legacy systems and legacy code—along with the sort of work that would continue to be necessary to keep all of those systems running. And rather than simply devote a passing line to it, Arranga and Price devoted a pull-out box to "Congratulations" for "every programmer," and noted that "the world's population joined you on the eve of the new millennium as both witness and participant in a job well done."[522]

Nevertheless, as the WDCY2K surveys had documented, not everyone within the IT sector had been in agreement about what Y2K would bring, and even if in the aftermath most within the IT sector seemed happy to breathe a sigh of relief, pat themselves on the shoulder for a job well done, and move on—there was still some debate within the IT world about what had transpired. More than halfway into the year 2000, the *Computing & Control Engineering Journal* offered contrasting analyses of the matter.[523] Anthony Finkelstein started by stating plainly that the predicted catastrophes did not occur, and though he noted "many wilder prophets of doom would not be considered to be engineering professionals, we failed to clearly and effectively counter their claims."[524] Finkelstein emphasized that "Predicting disaster is a win-win

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[520] Edmund Arranga and Wilson Price. "Fresh from Y2K, What's Next for Cobol?" *IEEE Software* 17, Iss. 2 (March/April 2000): 16-20.
[521] Ibid, 16.
[522] Ibid, 17.
[523] Anthony Finkelstein and Martyn Thomas. "Head-to-head: looking back at Y2K." *Computing & Control Engineering Journal* 11, Iss. 4 (August 2000): 156-159.
[524] Ibid, 156.

proposition" as either "you are a prophet in your own time" or you can claim that the non-event "as due to your foresight" and he criticized the idea that widespread failures had been covered up as "a standard conspiracy theory."[525] Blasting the various myths around Y2K, Finkelstein highlighted that most of them "owed more to popular culture than technical analysis."[526] And yet Finkelstein still stated "I believe that most organisations that spent heavily on Y2K were justified!" a point to which he added that "The political costs of under-reaction were greater than the perceived political costs of over-reaction."[527] In contrast to Finkelstein, Martyn Thomas defended the remediation efforts more strongly—though he began by calling the belief that "aircraft would fall out of the sky" and that "electric toasters would stop working" as "absurd forecasts," Thomas sought to differentiate between the ridiculous way the "popular press" had framed Y2K and the realities as they had been understood by the IT community.[528] Thomas took a long view on Y2K, drawing attention to all of the problems that had occurred in the lead up to the year 2000 that had made it clear to businesses and governments that the problem needed fixing, highlighted that "the Bug was a hydra" and noted that many bites would still be felt here and there (even if they would not receive much coverage), and he argued that even if "Some early forecasts were perhaps exaggerated to attract action" they may have "served a useful purpose where they encouraged effective action."[529]

Though neither Finkelstein or Thomas named any of the "prophets of doom" that they were criticizing in their own commentary, it is doubtless that many of their readers could think of a few figures who (fairly or unfairly) could be characterized in such a way. In the January 2000

[525] Ibid.
[526] Ibid.
[527] Ibid, 157.
[528] Ibid, 158.
[529] Ibid.

installment of his Y2K column in *Computerworld*, Ed Yourdon expressed relief that catastrophe had been averted while noting "it's a little too early to tell how many Y2K bugs will eventually be uncovered."[530] Yourdon reflected on his own role, and acknowledged his own predictions of "a pessimistic Y2K outcome," he recalled a previous confrontation with an IT manager who had responded to Yourdon's worry that most IT projects were not completed on time by who had insisted "*This time* it will be different!" and Yourdon acknowledged that it seemed that "*this time*" really had been different.[531] And in explaining how this could have happened, Yourdon credited all of the work that had gone into getting everyone on board. If in the pages of *Computerworld* Yourdon had struck a mainly relieved tone, elsewhere he let his frustrations out much more clearly, such as in a lengthy post to his website in which he played off of the comedian Rodney Dangerfield's famous line "I don't get no respect" to opine "Move Over, Rodney Dangerfield – You've got Company."[532] Yourdon openly recognized that he had "been one of the more vocal pessimists about Y2K for the last several years," but he expressed frustration with the number of angry (often profanity filled messages) he had been receiving since the start of the year 2000.[533] While not seeking to deny his past pessimism, Yourdon emphasized all of the grim information that had come out from government sources, drew attention to all of the massive expenditures by private companies, and pointed to media coverage as he exasperatedly grumbled at the way that some were acting as though he were personally to blame.[534] Defending himself by noting that he had never predicted that Y2K would bring about

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[530] Ed Yourdon. "The Lessons of Y2K Success." *Computerworld* 34, No. 4. (January 24, 2000): 40.
[531] Ibid.
[532] Ed Yourdon. "Move Over, Rodney Dangerfield – You've Got Company." *Yourdon.com* (http://www.yourdon.com/: January 6, 2000); archived at *Wayback Machine* (http://web.archive.org/web/20000511102531/http://www.yourdon.com/).
[533] Ibid.
[534] Ibid.

the end of the world, Yourdon countered the claim that it had all been a ploy to make money by noting "I made less money on [*Time Bomb 2000*] than most of the 25 technical books I've written over the years."[535] Stating that he had no intention of apologizing, Yourdon noted "for those of us who believed that we were doing the right thing, for the right reasons, it will be far more important to figure out why we were wrong" and on the flip side it would be "important for all of the Y2K optimists to figure out why there were right."[536] Granted, in the grand scheme of things, beyond feeling personally disrespected, in the pages of *IEEE Software*, Yourdon had mused that "If Y2K turns out to be a mere BITR [Bump in the Road], then it will quickly be forgotten, and businesses will move on to brave new world of e-commerce, distributed computing, and other new technologies."[537]

With the privilege of hindsight, it may seem that many of the more pessimistic claims by the like of Yourdon had been a bit hyperbolic—and his grim predictions did not come to pass. Nevertheless, his observation that if Y2K was merely a "bump in the road" that it would be "forgotten" as businesses accelerated as they merged onto the information superhighway proves to be significantly more prescient. While many figures within the IT community had recognized Y2K as a technical problem that required the application of technical skills (and the management expertise and funding that would make that possible), many of these same figures remained aware that Y2K was a crisis that had spilled over into public consciousness in a way that most software related problems seldom did. And thus, underlying this software problem was a broader matter about the non-technical public's understanding of these technical issues, a situation that

[535] Ibid.
[536] Ibid.
[537] Edward Yourdon. "IT Departments: Battling the Y2K Backlash." *IEEE Software* 17, Iss. 1 (January/February 2000): 100-101. 100.

Finkelstein eloquently captured in noting, "the public is mostly ignorant about computing. This ignorance is combined with a growing recognition that they are dependent upon it."[538]

Beyond the technical world, it was in this clash between the public's lack of technical understanding alongside their growing understanding of their dependency on computer systems, that much of the story of Y2K played out.

[538] Finkelstein and Thomas. "Head-to-head: looking back at Y2K." 157.

Chapter Three: "Y2K is coming! Y2K is coming!" The Paul Reveres of Y2K

"The computer has been a blessing; if we don't act quickly, however, it could become the curse of the age," those were the words with which Senator Daniel Patrick Moynihan concluded a July 31, 1996 letter to President Clinton.[539] Though it ended on a particularly ominous tone, from the outset the letter had struck up a foreboding aura by warning Clinton of how the "Year 2000 Time Bomb" could pose "extreme negative economic consequences" during his second term.[540] In laying out the risks represented by Y2K, Moynihan drew attention to three particular issues: the billions of dollars it would require to fix the issue, the lack of time remaining given the scale of the necessary work, and the economic impacts should the problem not be fixed.[541] Providing Clinton with a quick summary of the basics of the Y2K problem, and thereby noting that the problem had been known for some time, Moynihan noted that "One would expect that a quick fix of the problem would have been found but it hasn't happened and the experts tell me it is not likely."[542] And thus, if the work was not completed, the "blessing" might reveal itself to be the "curse."

With its mixture of evocative, if hyperbolic, language, basic technical explanation, and urgent commentary that there was work that could not be delayed—Moynihan's letter stands as an exemplar of the US Congress's response to Y2K. It was a complex balancing act that required sounding the alarm at a sufficient volume that it would be heard by those with the responsibility

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[539] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Investigating the Year 2000 Problem: The 100 Day Report.* 106th Cong., 1st sess., September 22, 1999. S. Prt. 106-31. 212. Note: the appendices of this report contains an assortment of letters written by and to various Senate members involved in investigating Y2K, these letters make up "Appendix II" in the report and can be found on pages 205-276.
[540] Ibid. 211.
[541] Ibid. 212.
[542] Ibid. 211.

of actually fixing the problem, while simultaneously reassuring members of the broader public who had heard the alarm that sufficient work was being done so they did not need to panic. Over the course of the latter half of the 1990s, Congress held well over a hundred hearings related to Y2K, on topics ranging from the status of the post office to the status of nuclear power plants. Numerous committees and sub-committees conducted these hearings, though in the Senate most were conducted by the Senate's Special Committee on the Year 2000 Problem, chaired by Senator Robert F. Bennett, and in the House of Representatives most were conducted by the Subcommittee on Government Management, Information, and Technology (which was part of the Committee on Government Reform and Oversight) chaired by Representative Stephen Horn.

Between the hearings themselves, the reports they issued, and the public facing comments given by the members of these committees—the role that Congress plays in the Y2K saga attests to the way in which Y2K shifted from being a purely technical problem to being a broader social problem as well. And while many members of Congress displayed a robust understanding of the technical complexities of the year 2000 problem, they were not the ones actually going in and fixing the code. To the extent that Y2K was often framed as a management challenge, Congress found itself (at least for the US) of being in the position wherein they were the managers of the managers—it fell to them to make sure that federal agencies were receiving the support and the pressure necessary to get the work done, while also keeping an eye on the work being done by the private sector. Furthermore, as Y2K gradually captured a greater share of the public's attention (and concern), members of Congress played an important role in reassuring the public about how much work had been done, while seeking to disseminate carefully worded warnings so that members of the public would be prepared just in case. And

while the Clinton administration generally maintained a fairly optimistic stance towards Y2K, the Republican controlled Congress consistently offered a more wary analysis.

While many members of Congress played noteworthy roles in the Y2K saga, this chapter will focus primarily on Senator Bennett and Representative Horn. As the chairs of significant Y2K related committees, in the Senate and House respectively, both were not only actively involved in Congressional work surrounding Y2K, they were also highly visible to the public. As the chair of the Senate's Special Committee on the Year 2000 Problem, Bennett became one of the most prominent Congressional voices on Y2K; while Horn's "Y2K Report Cards" (which he began issuing in 1996 and continued issuing through 1999) served to make his assessments of Y2K highly visible, especially as Horn had a tendency to assign the sorts of grades "you would not want to take home to your parents."[543] In explaining his work, and the work of his committee, Bennett noted "We have tried to be like Paul Revere. But I tell people we're not yet Chicken Little."[544] This chapter will explore the ways in which Bennett and Horn (as well as other members of Congress), tried to warn of the approaching threat, without simply wailing that the sky was falling.

Nevertheless, before fully turning attention to Bennett and Horn, it is necessary to first return to Moynihan's letter to President Clinton. In writing to President Clinton about Y2K, Moynihan supported his concerns about the impending computer crisis by deferring to the authority of the Congressional Research Service (CRS). As Moynihan explained, he had

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[543] U.S. Congress. House. Subcommittee on Government Management, Information and Technology of the Committee on Government Reform. "Press Release: Horn Grades Federal Government on the Year 2000 Problem." March 4, 1998. (http://www.house.gov/reform/gmit/y2k/980304.htm); archived at *Wayback Machine* (http://web.archive.org/web/20000816223548/http://www.house.gov/reform/gmit/y2k/980304.htm)

[544] Robert Bennett. "Paul Revere Not Chicken Little: Who's Sounding the Call for the Year 2000?" National Press Club. July 15, 1998. (http://www.senate.gov/~y2k/speeches/bennett980715.htm); archived at *Wayback Machine* (http://web.archive.org/web/20010110164753/http://www.senate.gov/~y2k/speeches/bennett980715.htm).

requested a study on the topic from the CRS, and it was the conclusions of that study which had compelled him to write his stark message to President Clinton. Indeed, in February of 1996, Moynihan had written to Daniel P. Mulhollan, who was then the director of the CRS, to request that study.[545] In that request Moynihan had referred to "recent media accounts" regarding potential problems, and thus requested "that the Congressional Research Service prepare a report for Congress" that would specifically address: the potential "economic cost of this problem," whether there was "an organized effort" either on the part of private companies of the federal government to address the problem, the timetable for fixing the problem, and how other countries were working to fix the problem.[546] According to Moynihan, the CRS study, a copy of which he sent to President Clinton, "substantiates the worst fears of the doomsayers."[547] And this study was to serve as an important foundational document for much of the Congressional work on the subject.

While it may have been somewhat hyperbolic to suggest that the CRS report was clad in the sackcloth robes of "the doomsayers," the report stated clearly and emphatically that "Given society's increasing reliance on computers, this problem could have a significant impact on a wide range of activities and interests worldwide."[548] With those impacts threatening everything from "government operations" to "the overall economy."[549] Expanding upon the types of things that might go wrong, the report warned that Social Security might "miscalculate the ages of citizens," that some "weapon systems could fail to function properly," that credit cards "with expiration dates after the year 2000" might not work properly, that patient records might

[545] U.S. Congress. *Investigating the Impact of the Year 2000 Problem: The 100 Day Report.* 209.
[546] Ibid.
[547] Ibid. 211.
[548] U.S. Library of Congress. Congressional Research Service. *The Year 2000 Computer Challenge*, by Richard M. Nunno. 96-533 SPR (1996), CRS-1.
[549] Ibid, CRS-2.

"become corrupted leading to improper treatment," and much else.[550] While the CRS report explained that the work of fixing the basic underlying problem was "technically simple" the overall task "of analyzing, correcting, testing, and integrating software and hardware among all computer systems that must interact" would represent "a very complex management task."[551]

In its sober assessment of Y2K, the CRS study claimed that those who had investigated the problem, including "many computer scientists, programmers, and…their managers" had concluded that Y2K was "formidable."[552] Responding to Moynihan's question about the state of action at that moment, 1996, the study noted that at the local and federal level a great deal of work remained, that the private sector would need "to make coordinated efforts," and that many "foreign companies and governments appear to be further behind…than their counterparts in the United States."[553] In addressing Y2K, awareness of the problem was the essential first step, and as the study made clear many entities (in the US and abroad) were not yet even in the awareness stage. Laying out the options for congressional action, the study noted that Congress could secure additional funding, that it could reprogram existing funding, that it could exert influence through its oversight function, and that it could draw attention to issues around standards and international efforts.[554] And though the CRS study noted that the US was ahead of many other countries, it did not treat this as cause for undue exuberance, warning that "Because the United States is more heavily dependent on computers than other nations, the year-2000 is probably a greater challenge here than anywhere else."[555] Considering the level of apocalyptic fervor that often surrounded Y2K it may be unfair to claim that the CRS's straightforward study

[550] Ibid, CRS-3.
[551] Ibid, CRS-2.
[552] Ibid.
[553] Ibid, CRS-8.
[554] Ibid, CRS-11-12.
[555] Ibid, CRS-12.

substantiated "the worst fears of the doomsayers," but nevertheless the study made it clear that those "doomsayers" were not wrong to be worried.

Considering whether Y2K was a "problem serious enough to warrant congressional action," the CRS study observed that attitudes towards Y2K within Congress were rather divided. There were some in Congress who were eager "to let industry solve technical issues of this sort," some who were worried that "this problem is so pervasive that it could affect the entire nation," some who believed that Congress could pass legislation to deal with the problem, and some who were concerned "that media sensationalism" might so frighten citizens as to cause them to lose confidence in "public institutions" which could potentially result in all manner of other problems.[556] Thus, the CRS study suggested that "Effective management by federal officials and communication by policy makers could mitigate those effects."[557] In other words, the actual technical work of fixing the computer systems at risk was not a task that would fall to members of Congress—but helping to raise awareness of the issue, while ensuring that this awareness did not turn into all out panic, that was a task that Congress could take up. Granted, as Bennett's evocation of Paul Revere and Chicken Little suggests, striking the proper balance between informing the public and causing panic can be a tricky thing to navigate—one person's Paul Revere is another person's Chicken Little.

In the Congressional response to Y2K we can see one of the main areas where Y2K shifted from being a technological problem to being a broader societal problem. And this chapter considers the ways in which Congress—particularly Senator Bennett and Representative Horn—attempted to acknowledge the work being done to address the technological problem, while their

[556] Ibid, CRS-10.
[557] Ibid.

public facing activities contributed to Y2K becoming more and more of a problem within their society. While Y2K remained an issue primarily being discussed and acted upon within the IT community it was possible to treat the problem as mainly a technological one; however, once the crisis became a matter of major public concern it became clear that this was not merely an issue to be solved by IT. After all, the IT community encounters challenges—including serious ones—fairly regularly, but most of them do not result in the Senate creating a special committee devoted to investigating each of those challenges.

By holding hearings, issuing reports, giving speeches, assigning grades, and providing public statements—members of Congress were not simply providing objective commentary on the state of Y2K, rather they were active participants in shaping the public perception of the crisis. Whether through the reports issued by the Senate's Special Committee on the Year 2000, or through the Y2K report cards issued by Representative Horn, members of Congress played a significant role in sounding the alarm, though they then found themselves wrestling with the question of exactly how loudly the alarm should sound, and for precisely how long. Furthermore, in the process of communicating about Y2K, members of Congress—individuals in positions of elected power—found themselves having to contend with the amount of power that had come to be vested in complex computerized systems such that their own ability to wield power and influence had itself become reliant on those computers continuing to function.

Moynihan had warned that the computer "has been a blessing," but "could become the curse of the age," and many of his fellow members of Congress saw it as their responsibility to ensure that the computer remained a blessing…even if some of what they found along the way might have made them want to curse.

"Grades You Would Not Want to Take Home to Your Parents"

With just over a month left before the fateful midnight, Representative Stephen Horn was sounding mildly optimistic about the progress that the federal government had made in preparing itself for Y2K. Assessing the government's state of readiness, Horn noted "We have come a long way since we began examining this enormous technological challenge four years ago."[558] Few members of the House of Representatives were as qualified as Horn to make such a sweeping pronouncement. Indeed, as chair of the House's Subcommittee on Government Management, Information, and Technology, Horn had the auspicious honor of chairing Congress's first Y2K related hearing on April 16, 1996. At that first hearing, Horn had struck a significantly less sanguine tone, warning at that time "we are too optimistic" and noting that "in the past, technology was ahead of where we thought it might be and has taken care of us. But now technology is not ahead in this area and there is no silver bullet."[559] In placing that glum comment in fuller context it is worth noting that the title of the hearing at which it was made was, "Is January 1, 2000 the Date for Computer Disaster?" and Horn's comment seemed to suggest that the answer to that titular question was at best "maybe."

Between 1996 and the start of the year 2000, Horn, along with Representative Constance Morella, who was the chair of the Committee on Science's Subcommittee on Technology, became two of the most prominent Congressional voices on Y2K. Horn and Morella held dozens

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[558] U.S. Congress. House. Subcommittee on Government Management, Information and Technology of the Committee on Government Reform. "Press Release: Horn Releases 10th and Final Y2K Report Cards." (http://www.house.gov/reform/gmit/y2k/991122.htm: November 22, 1999); archived at *Wayback Machine* (http://web.archive.org/web/20000608231953/http://www.house.gov/reform/gmit/y2k/991122.htm).
[559] U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and Oversight. *Is January 1, 2000, the Date for Computer Disaster?* 104th Cong., 2nd sess., April 16, 1996. 98.

of Y2K related hearings with subjects ranging from proposed solutions to the problem to the status of local government, and from the potential impacts of Y2K on satellites and global positioning systems to the question of whether or not the Post Office would be able to deliver. While Horn and Morella were certainly not the only House members participating in these hearings, as the chairs who generally had the literal first and last word at these hearings the two were consistently positioned to set the tone for the testimony and questioning which was to follow. A tone eloquently captured in Morella's gripping opening to a March 20, 1997 hearing on the risks of information technology failure, that "everyone in this room knows, we're all competing in a race against time to avoid an impending computer catastrophe."[560] For his part, at the start of that same hearing, Horn echoed Morella's foreboding pronouncement, noting that the pervasiveness and interconnectedness of computer technology meant that "the risks and consequences we're talking about today are of immediate and overwhelming concern to everyone."[561]

Given the scale of the problem, a point which those testifying at the hearings continually drove home, Horn and Morella searched for the best way to raise awareness so that the risks of Y2K did not turn into realities. The hearings they conducted made the scale of the challenge abundantly clear, but many of those same hearings (particularly early on), also suggested that the federal government's response to the crisis was dangerously sluggish. Faced with a looming threat and a need to make the danger more legible while also pushing for greater action, Horn

[560] U.S. Congress. House of Representatives. Subcommittee on Technology of the Committee on Science Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform. *Year 2000 Risks: What Are the Consequences of Information Technology Failure?* 105th Cong., 1st sess., March 20, 1997. 1.
[561] Ibid, 3.

seized upon a clever tactic, one that would make sense to anyone who had ever sat in a classroom: he began to issue report cards.

Between September of 1996 and November of 1999, Horn issued ten Y2K report cards—with 1996 and 1997 receiving a single report card each, and the report cards being issued quarterly in 1998 and 1999. While ten report cards provided the federal government ample time to display clear improvement, Horn's grades were not those bestowed by a particularly generous teacher. Indeed, as he commented upon releasing the third report card, "most are grades you would not want to take home to your parents."[562] And though Horn repeated his point about disappointed parents on the occasion of several iterations of the report cards being released, the grades bore out this sentiment. In July of 1996, the federal government was given a C-, by September of 1997 that grade was still a C-, in March of 1998 that grade had fallen to a D-, three months later in June of 1998 the grade reached its nadir with an F being assigned, in September of 1998 the grade had improved all the way up to a D, in the final report card for 1998 the grade was holding steady at a D. Luckily in 1999 the grades began to show signs of improvement, in February of 1999 the grade was up to a C+, June of 1999 and September of 1999 both saw the federal government receiving a B-, and by the time the final report card was issued in November of 1999 the federal government had clawed its way up to a B+.[563] And yet that B+ did not come without some critical comments being attached to it with Horn noting "we have serious concerns

[562] U.S. Congress. House. Subcommittee on Government Management, Information and Technology of the Committee on Government Reform. "Press Release: Horn Grades Federal Government on the Year 2000 Problem." March 4, 1998.

[563] Horn only began assigning cumulative grades with the third report card, issued in March of 1998. The grades that are mentioned here as averages for the first two report cards were created by the author so that all ten report cards can be seen as a unit. In assigning the C- grades for those first two report cards, I replicated the methodology that Horn used for calculating the later averages.

with some of the nation's most essential programs," adding that while progress had clearly been made some "programs remain at risk of failure."[564]

While government agencies issued mountains of reports regarding Y2K throughout the second half of the 90s, the report cards synthesized the content of those reports and put it forward in a public facing way that was immediately legible. Parsing through the careful terminology of department heads could leave a report reader somewhat uncertain as to that agency's genuine level of preparedness, yet seeing the clear grades in the report cards made things significantly simpler. Furthermore, the frequency with which the report cards were issued allowed them to be a useful guide as to the progress that was being made—even if the range of grades often did not show much in the way of progress, or showed exactly the opposite of progress. The report cards also stand in contrast to the lengthy reports generated by the Senate's Special Committee on the Year 2000 Technology Problem. In its initial report, the Senate's committee noted that "many organizations critical to Americans' safety and well-being are still not fully engaged in finding a solution," but two days before the Senate report had been issued, a report card had made much the same point by simply assigning the federal government a C+. And though the Senate's special committee also issued a "100 Day Report," the final report card had the advantage of being a 40-day report.

The report cards, and the idea of assigning grades, arose from the alarmed feelings shared by members of Horn's subcommittee in reaction to the initial Y2K hearings they had held.[565] Less than two weeks after holding its initial Y2K hearing, Horn and Ranking Minority Member

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[564] U.S. Congress. House. Subcommittee on Government Management, Information and Technology of the Committee on Government Reform. "Press Release: Horn Releases 10th and Final Y2K Report Cards" November 22, 1999.

[565] U.S. Congress. House of Representatives. Committee on Government Reform and Oversight. *Year 2000: Computer Software Conversion: Summary of Oversight Findings and Recommendations.* September 27, 1996. 104th Cong., 2nd sess., House Report 104-857. 5.

Carolyn Maloney had sent an oversight letter to the heads of 24 departments and agencies presenting them with thirteen questions designed to help the committee determine whether or not those agencies were doing enough to prepare.[566] The thirteen questions, many of which consisted of multiple sub-questions, ranged from broad general queries to requests for more specific information: the agencies were asked if they had started working to make sure their systems would be "year 2000 compliant," they were asked if they had undertaken "a risk assessment" to determine "the vulnerability" of programs and applications, they were asked if they had plans for assessing the year 2000 problem, if there were contingency plans, if the agency even had a full inventory of all of the computer systems used by their agency, what resources were being devoted to the problem, and more.[567] If the hearing that had prompted Horn and Maloney to write to the department heads had been alarming, than the responses they received to their questions did little to reassure them, indeed "the overall response the subcommittee received was discouraging."[568]

Of the twenty-four agencies and departments contacted, only nine had a plan for addressing the problem, five had not yet assigned someone within their department to take charge of the issue, and seventeen did not have cost estimates.[569] Not all of the responses were abysmal: the Social Security Administration had been working on fixing the Y2K problem since 1989 and was well ahead of its fellow agencies, while certain other agencies where information technology was crucial to their mission were also doing relatively well.[570] In assigning its initial grades, the committee focused primarily on four questions: did the agency have a Year 2000

[566] Ibid.
[567] Ibid. 14-18. The initial letter, featuring the questions, that Horn and Maloney sent is included in this report.
[568] Ibid. 5.
[569] Ibid.
[570] Ibid.

plan, was there a specific Year 2000 program manager, did the agency have a cost estimate for fixing its Y2K issues, and had the agency responded to the committee's questions.[571] Four agencies earned As, three agencies earned Bs, three agencies earned Cs, ten agencies were given Ds, and four agencies were given Fs.[572] It was not the sort of report card that gets hung on the fridge.

Though the grades were in and of themselves worrisome, drawing upon the assessment from the CRS, the committee emphasized that the truly frightening thing was that there existed "a high risk of system failure if the year 2000 computer problem is not corrected."[573] Therefore the agencies needed to get to work and take the matter seriously in order to "ensure that January 1, 2000 will not be a day when computers go haywire and life as we know it is severely disrupted."[574] As the committee made clear in their report, of which the first report card was a part, their initial investigations into Y2K had led them to conclude that there was not sufficient awareness regarding Y2K, that the Clinton administration was not yet appropriately prioritizing the issue, that the costs could be in the billions, that even the agencies that were doing well still had a great deal of work to do, and most importantly that time was quite literally running out. Thus, in explaining the report card, the committee report explained that "the decision to give each agency a grade was intended to emphasize the responsibility that individual departments and agencies have for their own performance."[575] Though as the full report had made clear, if those departments and agencies did not wind up making the grade, it was not only that agency or department that would suffer the consequences.

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[571] Ibid. 7-8.
[572] Ibid.
[573] Ibid. 11.
[574] Ibid. 12.
[575] Ibid. 6.

More than a year elapsed between the first report card and the second, and if the hope of the initial report card had been to spur action, the second report card made it clear that not nearly enough action had been taken. In announcing the second round of grades, Horn slipped into the aura of the dejected educator, noting "I cannot issue these poor grades without feeling sadness and disappointment. As a former university president and professor, I am anguished to note that the Department of Education is one of the departments receiving a failing grade."[576] With the second report card, Horn took full ownership of the grades, stating at the release of the report card that "I will take responsibility for the actual grades" noting that he had assigned them after consulting with the subcommittee's professional staff and the General Accounting Office.[577] Though with the second report card Horn had not yet started assigning a single cumulative grade to the entire federal government, the grades on the second report card showed more regress than progress.

Where the first report card had assigned four As, the second report card assigned a single A, and it was an A- at that.[578] Whereas in the initial report card, a relatively good grade could be achieved simply by being aware of the issue and having plans for addressing it, the second report card was looking for action—and in that regard it found many agencies sorely lacking. One factor that negatively impacted grades was that in the process of becoming more aware of the scale of their Y2K problems, many agencies realized that they had even more work to do than they had originally assumed. Furthermore, if time had been of the essence when the first report card had been issued in July of 1996, by September of 1997 (when the second report card was

[576] U.S. Congress. House. Subcommittee on Government Management, Information and Technology of the Committee on Government Reform. "Press Release: Horn Grades Federal Government on the Year 2000 Problem." (http://www.house.gov/reform/gmit/press/p970915.htm: September 15, 1997); archived at *Wayback Machine* (http://web.archive.org/web/20000607045846/http://www.house.gov/reform/gmit/press/p970915.htm).
[577] Ibid.
[578] Ibid.

issued) more than a year had gone by, and too many agencies and departments had squandered that time. In issuing the second report card, Horn struck a combative and frustrated tone, blasting the agencies for their lack of action, and accusing Clinton's executive branch of failing to show the necessary urgency. Emphasizing the point that by then was becoming a sort of Y2K commonplace, that fixing Y2K was not really a technical issue so much as it was a management problem, Horn placed the blame on the managers at the agencies and departments (and on the President) for failing to lead in this moment when leadership was essential.

Thus, Horn called on Clinton to "appoint an individual who will step up to the plate and directly address the Nation's computer problem."[579] There was little in Horn's comments on the second report card that seemed designed to reassure, Horn warned of "disaster," of some agencies having their "computer systems melt down," and he struck out at the administration by stating "while the President and the Vice President promise computer marvels to come in the 21st century, the American taxpayer needs today's Federal computers fixed before they come crashing down when the near future actually arrives only 838 days from today."[580] But in the even nearer future, there would be another report card, and Horn noted that he was "still hopeful" that every agency could earn an A, provided they were willing to work hard enough.[581]

Agencies and departments did not need to wait a full year for the next set of grades to be released; however, as lackluster as the grades had been in 1996 and 1997, 1998 saw the grades reach their nadir. In releasing the first grades of 1998, Horn noted that "most are grades you would not want to take home to your parents," a fair descriptor for a report card on which the

[579] Ibid.
[580] Ibid.
[581] Ibid.

overall grade was a D-.[582] And the overall grade breakdown now saw three As, six Bs, four Cs, six Ds, and five Fs.[583] While some departments showed clear signs of improvement—the VA had moved from a C to an A, and the EPA had moved from a C to a B—there was also movement in the opposite direction—HHS had gone from a B- to a D, and perhaps most worrisome the DoD had moved from a C- to an F.[584] The grade received by DoD was particularly alarming given that within that single agency were approximately one third of all the mission-critical computer systems in the entire federal government, and Horn noted that these grades made clear that "it is time for people outside Defense—as well as inside—to start sweating about this."[585] While the grade had been lowered, it was also the case that the factors that were being evaluated had now changed—insofar as the initial purpose of the report cards had been to raise awareness, now that awareness had been raised that which was being evaluated was no longer "defining the problem" but the trickier "solving the problem," a task which had to be completed in less than twenty-two months.[586] Nevertheless, insofar as Y2K was still largely seen as a management problem, there were signs that the Executive Branch was taking the matter more seriously—Clinton had established a Y2K task force and appointed John Koskinen (who was already known to the Congressional committees working on Y2K as he had previously been the Deputy Director of the

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[582] U.S. Congress. House. Subcommittee on Government Management, Information and Technology of the Committee on Government Reform. "Press Release: Horn Grades Federal Government on the Year 2000 Problem," March 4, 1998.
[583] U.S. Congress. House. Subcommittee on Government Management, Information and Technology of the Committee on Government Reform. "Year 2000 Progress. Report Card, Year 2000 Progress for Federal Departments and Agencies, Overall Grade is D-." (http://www.house.gov/reform/gmit/y2k/980304gc.pdf: March 4, 1998); archived at *Wayback Machine* (http://web.archive.org/web/20000816223557/http://www.house.gov/reform/gmit/y2k/980304gc.pdf).
[584] Ibid.
[585] U.S. Congress. House. Subcommittee on Government Management, Information and Technology of the Committee on Government Reform. "Press Release: Horn Grades Federal Government on the Year 2000 Problem," March 4, 1998.
[586] Ibid.

OMB) to head it.[587] Though Horn continued to warn "that the executive branch is still on the edge of failure."[588]

While 1998's first quarterly report card was bad, its second report card was even worse. With perhaps the only small comfort being that after receiving an F there was really nowhere to go but up. Now the overall grade breakdown saw four As, four Bs, six Cs, four Ds, and six Fs.[589] As Horn explained it "underlying this dismal grade is a disturbing slow-down in the Government's rate of progress."[590] But what flew above these grades was the failure of a communications satellite from two weeks previous that had "spun out of control," impacting some "90 percent of all pagers in the United States" as well as a range of other businesses—from television stations to banks.[591] While the satellites failure was not Y2K related, it was an illustration of the fragility of complex technological systems, and a "tiny hint of what the Year 2000 could bring."[592] Though the deadline was looming ever closer, Horn's report card emphasized that "we must not panic," and highlighted that the grades were a reason "to redouble our efforts, and to move aggressively forward."[593] And Horn renewed his calls for Clinton to make Y2K a priority.

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[587] Ibid.
[588] Ibid.
[589] U.S. Congress. House. Subcommittee on Government Management, Information and Technology of the Committee on Government Reform. "Year 2000 Progress. Report Card, Year 2000 Progress for Federal Departments and Agencies, Overall Grade is F." (http://www.house.gov/reform/gmit/y2k/980602gc.pdf: June 2, 1998); archived at *Wayback Machine* (http://web.archive.org/web/20000816223543/http://www.house.gov/reform/gmit/y2k/980602gc.pdf).
[590] U.S. Congress. House. Subcommittee on Government Management, Information and Technology of the Committee on Government Reform. "Press Release: Horn Releases Y2K Grades: Government's Overall Grade a Dismal 'F'." (http://www.house.gov/reform/gmit/y2k/980602.htm: June 2, 1998); archived at *Wayback Machine* (http://web.archive.org/web/20000520020649/http://www.house.gov/reform/gmit/y2k/980602.htm).
[591] Ibid.
[592] Ibid.
[593] Ibid.

Though the overall grade of an F was certainly "dismal," this fourth report card also made quite clear the criteria by which agencies and departments were being evaluated and what was necessary for these agencies to earn passing grades. Most significant were the number of "Mission-Critical Systems" an agency relied on, the estimated year by which the agency would be done with its remediation work, and the percentage of these systems that would be repaired by the end of March 1999 (which President Clinton and the OMB had set as the date by which all federal agencies needed to be finished with their Y2K repairs). To receive an A, an agency needed to be on track to make that March deadline. But the number of Mission-Critical Systems was not the only evaluative criteria: contingency plans, an assessment of internal telecommunications systems, the number of systems relying on embedded systems, and the state of the external data exchanges with which an agency interacted were also taken into consideration. The base grade was set by the status of Mission-Critical Systems, but the other four criteria could still raise or lower the grades. Thus, the SSA continued to be praised for its progress, being further complimented for being "very helpful to other agencies," while the DOE's woeful status led to a comment of "if there is such a thing as F minus, DOE has earned it."[594] While the report card featured an as yet to be filled in "final grade" column, it was clear that much of the grading was based on expectations of future work—deadlines were looming, but they had not yet occurred.

Unfortunately for the Clinton administration, and for those who were hoping that cool heads would prevail around Y2K, the bad grades of 1998 coincided with the moment at which public attention towards Y2K was increasing. And in such a moment, Horn's grades did little to assuage concerns. In a small article reacting to the fourth report card, *The Washington Post*

[594] Ibid.

pondered "the proper degree of panic" for approaching Y2K and expressed the view "that a little more panic now would be a lot safer than misplaced calm."[595] In what seems to have been meant as a compliment, Horn was referred to as an "alarm-sounder" and his bestowing of an F was noted alongside his comments that some agencies remained "nowhere near ready."[596] Granted, the press account featured something that the report cards themselves lacked: a retort. Horn may have been giving out bad grades, but it was noted that Horn's "assessment differs sharply from that of John Koskinen"—and though Koskinen did not suggest that there was no reason to worry, he emphasized that the agencies and departments were on track.[597] In juxtaposing Horn and Koskinen, *The Washington Post* recognized the government's interest in "preventing all out panic," but noted that the challenge was in striking "the balance between sparking a panic and letting people be lulled into a false sense of security."[598]

Luckily, for those hoping to see reasons not to panic, the fifth report card represented a definite improvement over the fourth—as what had been an F increased to a D. Now the overall grade breakdown saw three As, five Bs, three Cs, seven Ds, and still six Fs.[599] While a D is certainly preferable to an F, Horn noted that the progress that was being made was not sufficient given that the deadline was getting closer and closer. And as Horn further explained, drawing once more upon his personal background for dramatic relief, "as a former professor, I have seen students flunk out of college by earning too many 'Ds.' This is not a grade you take home to

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[595] Anonymous. "The Approaching Bug." *The Washington Post.* June 14, 1998. C6.
[596] Ibid.
[597] Ibid.
[598] Ibid.
[599] U.S. Congress. House. Subcommittee on Government Management, Information and Technology of the Committee on Government Reform. "Year 2000 Progress. Report Card, Year 2000 Progress for Federal Departments and Agencies, Overall Grade is D." (http://www.house.gov/reform/gmit/y2k/y2kcharts.pdf: September 9, 1998); archived at *Wayback Machine* (http://web.archive.org/web/20000519072055/House.gov/reform/gmit/y2k/index.htm).

your parents; and it is definitely not a grade to take back to the voters and taxpayers."[600] Furthermore, there was a not insignificant difference between an individual student flunking out of college, and the federal government flunking in its attempt to keep the technological systems upon which the nation relied operational. What continued to make the matter difficult was that the deadline remained immovable, and the growing awareness that even as federal agencies and departments were struggling, so too were efforts in many states and cities.

A little bit more than a month after the fifth report card was issued, and a little more than a month before the issuing of the sixth report card, Horn's Committee on Government Reform and Oversight issued a cumulative report on the Y2K problem. While drawing upon and summarizing the testimony that had been given by a range of officials and experts at the hearings it had held, the report cards were also present in the report—indicating the ways in which the committee was not merely a complacent observer of what was transpiring, but to show how the committee's work was pushing the necessary actions forward. As the report explained, its report cards had "prodded executive branch agencies to action by grading them," and "each report card has revealed a disturbing lack of progress within the executive branch."[601] The report put forth the committee's findings to that point, including the unsettling observations that: the federal government was not on track to meet the deadline, that many state and local governments were lagging even further behind, that the service of many infrastructural systems remained uncertain, that fears of litigation were preventing companies from being honest about the state of their repairs, that there was a shortage of skilled workers, and other less than reassuring points.[602] The

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[600] Ibid.
[601] U.S. Congress. House of Representatives. Committee on Government Reform and Oversight. *The Year 2000 Problem.* October 26, 1998. 105th Cong., 2nd Sess., House Report 105-827.4.
[602] Ibid. 4-12.

report concluded by recognizing that "an enormous amount of progress has been made, but at least as much remains to be done and, unlike virtually every other major challenge, the Year 2000 problem presents an absolute deadline."[603]

Affixed to the report, were the "additional views" that captured the perspective of the members of the committee who were in the minority party (the Democrats, at that time). While the minority report did not dispute that there was more progress to be made, it challenged the overall report's characterization of the Clinton administration's actions. Arguing that contrary to Horn's common accusations at his report card press conferences, "President Clinton and Vice President Gore have demonstrated significant leadership on these issues."[604] The minority opinion accused Horn's previous report card of accentuating the negative, even as that same report had also shown that most agencies were making progress.[605] And the minority also sought to redistribute some of the blame back to the Republican controlled Congress, by noting that something that had stymied early progress on fixing Y2K was that Congress had been "slow in approving funds."[606]

While the committee report provided a comprehensive overview of the committee's work on Y2K, situating the report cards within a larger narrative of ongoing hearings and testimony, and emphasized that the report cards were more of a reflection of Horn's analysis than a consensus view of the committee—the report nevertheless demonstrated the powerful simplicity of the report cards. There was an immediacy to a grade that could not be easily matched by a lengthy government report, or even fairly punchy testimony. Where hearings and government

[603] Ibid. 70.
[604] Ibid. 112.
[605] Ibid. 113.
[606] Ibid. 114.

reports required careful analysis to pick out the clear details, and even the report cards featured multiple factors to parse, the report cards consistently summarized all that information in an easily comprehensible format. In the disagreement between the committee's majority and minority members can be seen a slight struggle over control of the Y2K narrative, with much of the question being the extent to which Horn's negative grades were serving to cast a gloomy aura over the Clinton administration's attempts to emphasize the work it was doing.

And yet the debate the report revealed over the speed with which progress was being made, received a further push in the direction of "insufficient" when Horn released the fourth and final report card of 1998 (which was the sixth report card overall). While the previous report card had at least been an improvement from an F to a D, this report card saw the overall grade holding steady at a D.[607] Despite the overall grade remaining the same, the actual distribution of grades showed a fair amount of change from the previous report card: the grades now included three As, six Bs, eight Cs, two Ds, and five Fs.[608] As Horn glumly assessed the matter, "in a little over 400 days, America and the world will come to terms with a problem of our own making."[609] And based on the information that had been used to assign these grades, Horn estimated that unless the rate of progress were to change that "one third of the Federal Government's mission critical systems will not be Year 2000 compliant by the deadline established by the President's

[607] U.S. Congress. House. Subcommittee on Government Management, Information and Technology of the Committee on Government Reform. "Press Release: Horn Releases Last Set of Y2K Grades for 1998: Executive Branch Merits an Overall D." (http://www.house.gov/reform/gmit/y2k/981123.htm: November 23. 1998); archived at *Wayback Machine* (http://web.archive.org/web/20000520104626/http://www.house.gov/reform/gmit/y2k/981123.htm).
[608] U.S. Congress. House. Subcommittee on Government Management, Information and Technology of the Committee on Government Reform. "Year 2000 Progress. Report Card, Year 2000 Progress for Federal Departments and Agencies, Overall Grade is D." (http://www.house.gov/reform/gmit/y2k/gradecard1123.pdf: November 23, 1998); archived at *Wayback Machine* (http://web.archive.org/web/20000816223456/http://www.house.gov/reform/gmit/y2k/gradecard1123.pdf).
[609] U.S. Congress. House. Subcommittee on Government Management, Information and Technology of the Committee on Government Reform. "Press Release: Horn Releases Last Set of Y2K Grades for 1998: Executive Branch Merits an Overall D." November 23. 1998.

deadline of March 30, 1999."[610] Of course, failing to meet the March deadline was not the same as missing the ultimate deadline as 1999 turned into 2000, but this projection was still a worrisome sign. Horn noted that Y2K had "become more and more visible as the media continues to present this issue to the public in an informative and , in most cases, non-alarmist manner" but he added that the problem was still "not receiving the attention it deserves form the President."[611] Reporting on the release of the sixth report card, Stephen Barr of *The Washington Post* quoted Horn as saying that "the picture is a very gloomy one" even as Koskinen offered a counter quote of "I'm not gloomy."[612] Koskinen sought to highlight the progress that was being made and the "phenomenal amount of hard work going on in the agencies" and expressed the belief that "by the next quarterly report it will be clear that the federal government is ahead of most private-sector industries in the United States."[613]

Fortunately for Koskinen, the first report card of 1999 proved him right, as the overall grade leapt from a D all the way up to a C+. This jump captured a shift in agency and departmental grades to a point where eleven were now receiving As, seven were now receiving Bs, three were receiving Cs, none were receiving Ds, though three agencies continued to receive Fs.[614] Commenting on the latest grades Morella amusingly commented that "At least we know there is recognition that 'Y2K' is not a new cereal."[615] But even as he acknowledged that "many

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[610] Ibid.
[611] Ibid.
[612] Stephen Barr. "Mixed Gains Against a Glitch." *The Washington Post*. November 24, 1998. A17.
[613] Ibid.
[614] U.S. Congress. House. Subcommittee on Government Management, Information and Technology of the Committee on Government Reform. "Year 2000 Progress. Report Card, Year 2000 Progress for Federal Departments and Agencies, Overall Grade is C+." (http://www.house.gov/reform/gmit/y2k/990222gc.pdf: February 22, 1999); archived at *Wayback Machine* (http://web.archive.org/web/20000816223446/http://www.house.gov/reform/gmit/y2k/990222gc.pdf).
[615] Jim Abrams. "Key Agencies Found Lagging on Y2K." *The Washington Post*. February 23, 1999. A17.

agencies have made truly remarkable progress," Horn remained wary of celebrating too soon.[616] With less than a year remaining, the grading rubric was also beginning to change, as now it was no longer the not so simple matter of systems having been remediated, but also making sure that those systems had been tested. Lest the signs of progress give rise to unearned calm, Horn remained firm in stating that "the Year 2000 problem is real; its consequences are serious; and the deadline remains unstoppable."[617] And without disagreeing with Horn's comments on the reality of the problem, Koskinen seemed to largely be "pleased" with the first report card of 1999, saying that Horn had "complained I was overoptimistic, but when the dust gets settled, we'll find that I was more right than he was, and I'm delighted with that."[618]

While three more report cards remained before the "unstoppable" deadline, there was to be another important deadline that would occur between the seventh and eighth report cards: the March 31, 1999 deadline set by the Clinton Administration and the OMB. At a hearing held shortly after that deadline had passed, Morella acknowledged that the administration had announced that "92 percent of Federal systems had met the governmentwide goal of Y2K compliance."[619] Continuing to strike a balance between recognizing progress without acting as though the finish line had been reached, Morella and Horn both emphasized that there was still work to be done.[620] And though 92% had met the deadline, the hearing brought together

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[616] U.S. Congress. House. Subcommittee on Government Management, Information and Technology of the Committee on Government Reform. "Press Release: The Progress of the Executive Branch in Meeting the Year 2000 (Y2K) Problem." (http://www.house.gov/reform/gmit/y2k/990222.htm: February 22, 1999); archived at *Wayback Machine* (http://web.archive.org/web/20000608114122/http://www.house.gov/reform/gmit/y2k/990222.htm).
[617] Ibid.
[618] Abrams. "Key Agencies Found Lagging on Y2K." A17.
[619] U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and the Committee on Science. *Are the Federal Government's Critical Programs Ready for January 1, 2000?* 106th Cong., 1st sess., April 13, 1999. 1.
[620] Ibid. 1-3.

representatives from four agencies (Agriculture, USAID, State, and Treasury) that had failed to meet that deadline in order to hold them to account. Providing an account of the work that remained Diedre Lee, acting Deputy Director for Management at the OMB, highlighted to the committee that more work had been done in the weeks since the deadline had passed—and many of the agencies that were not included in that 92% were still very close to reaching completion.[621] A point which was reinforced by the representatives of the four lagging agencies who were testifying at the hearing, each of whom emphasized how much progress they were making and how close to completion they were. Horn still assumed a somewhat skeptical tack, asking the GAO and OMB representatives at the hearing if there had been any signs "of manipulation of data…are agencies gaming the numbers to appear better positioned then they are."[622] Though Horn was informed that there was no such evidence. The overall tone of the hearing was hopeful, the work was being completed, progress was being made, but the work was not over, and those testifying knew that they were in the position that would be held accountable should things go wrong. As James Flyzick of the Treasury department amusingly noted in acknowledging that CIOs were those tasked with making sure Y2K fixes were completed, "CIO may mean 'Career is over,' if we do not meet our year 2000 requirements."[623]

June of 1999 saw the cumulative grade assigned rise to a B-, the highest grade the government had yet to receive from Horn. This B- represented fourteen As, three Bs, six Cs, zero Ds, and one F.[624] This represented a not insignificant improvement, where February's report card

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[621] Ibid. 11.
[622] Ibid. 93.
[623] Ibid. 99.
[624] U.S. Congress. House. Subcommittee on Government Management, Information and Technology of the Committee on Government Reform. "Year 2000 Progress. Report Card, Year 2000 Progress for Federal Departments and Agencies, Overall Grade is B-." (http://www.house.gov/reform/gmit/y2k/ReportCard.pdf: June 15,

had found that the government's mission-critical systems were 79% compliant, by the time of the June report card that number was now 94%, and that more than half of the departments being graded were now receiving As was a clear sign of progress. Nevertheless, the overall grade was still only a B-, which was in turn reflective of the grading criteria shifting once more, to now place greater attention on not only mission-critical systems but the status of high-impact programs upon which many Americans relied. Horn justified that the grades were getting tougher by noting "Just as you would not grade college seniors on the same set of criteria expected of college juniors, our expectations for this quarter rose."[625] Insofar as seniors have something of a reputation for slacking off in their final year, Horn seemed committed to reminding those he was grading that this was not the time to relax.

With only one hundred and twelve days remaining before the year's end, Horn issued his penultimate report card—which saw the overall grade sitting still at a B-. Considering that there had been past report cards where the grade had dropped, remaining stagnant was not the worst possibility, but with barely more than a hundred days remaining the grade drove home the point that none of the agencies could afford to relax. This second to last report card saw fourteen agencies receive As, four receive Bs, four receive Cs, two receive Ds, but at least no agencies were still being given Fs. Nevertheless, Horn stated that "progress during this quarter…is discouraging. The flurry of activity we saw among federal agencies earlier this year has slowed

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1999); archived at *Wayback Machine* (http://web.archive.org/web/20000519072055/House.gov/reform/gmit/y2k/index.htm).

[625] U.S. Congress. House. Subcommittee on Government Management, Information and Technology of the Committee on Government Reform. "Press Release: House Subcommittee Issues Report Card on the Federal Government's Progress in meeting the Y2K Problem." (http://www.house.gov/reform/gmit/y2k/990615.htm: June 15, 1999); archived at *Wayback Machine* (http://web.archive.org/web/20000530011102/http://www.house.gov/reform/gmit/y2k/990615.htm).

to a snail's pace."[626] It was as if the feared senioritis was setting in. Whereas there had been significant improvement between the seventh and eighth report cards, between the eight and nine report card the compliance rate had only been improved "by a measly one percent."[627] Horn directed much of the blame for this at the Department of Defense, which represented the department with the largest number of mission critical systems, and which had again revised its number of mission-critical systems upwards, prompting Horn to gripe that "Defense's numbers are about as consistent as the stock market."[628] Undergirding this frustration about Defense's numbers was the concern that changes in the numbers of mission-critical systems meant that new systems were still being discovered, and with so little time remaining it simply seemed as though there was not enough time remaining to do everything from remediation to testing. The final grade would be coming soon, and so too was the final deadline.

A few weeks prior to issuing his final report, Horn and Morella's subcommittee's jointly held their last Y2K hearing before the end of 1999. Reflecting back on when they first started working on Y2K, Horn humorously noted that originally "the then little publicized year 2000 computer problem, the millennium bug seemed to be more suited to the realm of exterminators than Congress."[629] With fifty days left before "the unforgiving and immovable deadline" Horn noted that the American people still had questions and that they were relying on Congress to

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[626] U.S. Congress. House. Subcommittee on Government Management, Information and Technology of the Committee on Government Reform. "Press Release: Horn Releases Ninth Y2K Report Cards." (http://www.house.gov/reform/gmit/y2k/990910.htm: September 10, 1999); archived at *Wayback Machine* (http://web.archive.org/web/20000608142322/http://www.house.gov/reform/gmit/y2k/990910.htm).
[627] Ibid.
[628] Ibid.
[629] U.S. Congress. House of Representatives. Subcommittee on Technology of the Committee on Science and the Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform. *Y2K Myths and Realities.* 106th Cong., 1st sess., November 4, 1999. 1.

provide reassuring answers.[630] While commending the committee and complimenting those who had worked on fixing the problem, Morella also noted that much remained to be done, acknowledging the level of public worry by noting that "if we are to calm public fears, we must provide the public with facts."[631] A matter made all the more difficult given that "Y2K: The Movie" a made for tv disaster spectacle was set to air on November 21st.[632] Testifying at the hearing, Koskinen highlighted all of the work that had been done, noting that contingency plans were also in place, drawing attention to the "Y2K and You" information booklet the Clinton administration had helped publish to inform the public, while stating clearly "we do not believe the Y2K issue will create significant problems in the United States."[633] During questioning Morella noted that some "from the Y2K community" had accused Koskinen of being "overly optimistic" likely due to the fact that he represented the Clinton Administration, and thus she asked him how he might "respond to those critics?"[634] Koskinen acknowledged that there had long been a vocal minority "predicting the end of the world as we know it on the ground that this is a massive problem…their prediction has been we will never be able to solve it."[635] Koskinen noted that his disagreement with those taking a gloomy perspective was not over whether "it is a massive problem, it has been with whether we will be able to solve it."[636] And Koskinen was confident that it had been solved. Yet with so little time remaining, and so much concern over public perception, the final grade issued by Horn had tremendous potential to stoke fear or disseminate calm.

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[630] Ibid. 2.
[631] Ibid. 7.
[632] Y2K: The Movie is discussed in more detail in the fourth chapter of this dissertation.
[633] Ibid. 13.
[634] Ibid. 74.
[635] Ibid. 75.
[636] Ibid.

With a little bit more than a month left before the end of the year, Horn issued his final report card, a grade that would convey (for better or worse) whether people should be preparing for calamity or expecting no major disruptions. On the occasion, Horn noted that Congress had held some 188 hearings on the subject of Y2K, and that his subcommittee had been responsible for holding 43 of those—including the first hearing on Y2K.[637] And with this final report card, Horn noted that "we have come a long way since we began examining this enormous technological challenge four years ago."[638] Where at the outset, in 1996, only nine of the twenty-four departments and agencies reviewed even had a plan to address Y2K, by the end every agency was well aware of the problem, even if some were still not quite finished. Indeed, if anyone in the Clinton administration had been hoping that Horn's final report card would be an A+, they were surely disappointed. In issuing the final report card Horn noted that four departments still had mission-critical systems that were not fully fixed, and that as many as 18 of "the nation's most essential programs, affecting millions of Americans" were not ready.[639] Rather than close out with rousing compliments to the workers who had poured themselves into fixing the problem, Horn closed out his final press release with a dour reminder that Y2K related incidents would not only occur on January 1, 2000, and he exhorted everyone to "take reasonable measures to ensure their health and safety over the next few months."[640]

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[637] U.S. Congress. House. Subcommittee on Government Management, Information and Technology of the Committee on Government Reform. "Press Release: Horn Releases 10th and Final Y2K Report Cards." (http://www.house.gov/reform/gmit/y2k/991122.htm: November 22, 1999); archived at *Wayback Machine* (http://web.archive.org/web/20000608231953/http://www.house.gov/reform/gmit/y2k/991122.htm).
[638] Ibid.
[639] Ibid.
[640] Ibid.

And the dire final grade that gave rise to such dissatisfied remarks? It was a B+, the highest grade the government received. It represented fifteen As, five Bs, three Cs, one D, and zero Fs were given.[641]

Contrary to the somewhat dour tone Horn had struck in releasing the final grades, *The New York Times* called it "a respectable report card" and noted that "the expanded grading" whereby Horn had started to also talk about essential programs "proved to be more trouble than it was worth" insofar as such grades had more to do with "incomplete readiness around the country where services are delivered rather than substantial evidence of actual Year 2000 vulnerabilities."[642] While presenting the comments delivered at his final report card press conference, *The Washington Post* also brought in voices from the particular agencies that disputed Horn's accusations that they were still lagging. Linda Ricci, spokeswoman from the OMB, was quoted taking a much more reassuring tack, claiming that Horn's grades were based on reports that were already out of date, and noting "we have every reason to expect that the government will be fully compliant in time for the date change to the year 2000."[643] And several days later, revisiting the grades, *The Washington Post* in describing Horn's report cards noted that the final report card "offered a typical mix of reassurance and ambiguity."[644] Noting that the "readiness people have a delicate line to walk," where once they needed "to jolt sleepy

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[641] U.S. Congress. House. Subcommittee on Government Management, Information and Technology of the Committee on Government Reform. "Year 2000 Progress. Report Card, Year 2000 Progress for Federal Departments and Agencies, Overall Grade is B+." (http://www.house.gov/reform/gmit/y2k/report_card_final1.pdf: November 22, 1999); archived at *Wayback Machine* (http://web.archive.org/web/20000609110610/http://www.house.gov/reform/gmit/y2k/report_card_final1.pdf).
[642] Barnaby J. Feder. "Final Grades are Ready on Year 2000 Readiness." *The New York Times*. November 22, 1999. C10.
[643] Stephen Barr. "Y2K Critic Gives U.S. a B-Plus." *The Washington Post*. November 23, 1999. A25.
[644] Anonymous. "Braced for the Millennium." *The Washington Post*. November 27, 1999. A24.

bureaucracies into action with tough talk about what might go wrong" those same people now needed to speak carefully lest their words lead to "a panic-fueled run on supplies."[645]

Beginning with a C- in the summer of 1996, the Y2K report cards took Y2K watchers from the depths of apocalyptic anxiety to reassuring plateaus and even some hopeful heights. The entirety of 1998 had seen report cards drifting from a dismal D-, down to an F, before gradually climbing back up to a still depressing D. Luckily, for all the fears of senioritis setting in, 1999 showed fairly consistent improvement from a C+ at the years end, to the B+ that represented the final grade. And as the numerous department heads and other figures who at one point or another found themselves having to explain what they were doing before Horn and Morella rushed to make the final changes necessary, the question that lingered was whether a B+ would be good enough.

As a way of communicating a looming threat, and the work being done to prepare for it, there is much to be said for issuing report cards. For report cards can gather massive amounts of information from disparate sources and easily summarize the conclusions drawn from that information with a simple and clear letter grade. What's more it presents these findings in a way that is easy to understand for most people who have spent some time in a classroom that uses a similar grading scale. Or, to put it more simply, a person did not need to be an expert in the technical minutia of Y2K in order to understand that it was not a good thing for the federal government to be given an "F," and even once the federal government began improving the overall average it was still clearly not a good thing for individual agencies to be given Ds and Fs. And while the grades offered a certain degree of punchy public clarity, the grades also could be somewhat ambiguous. It is clear that an F stands for failure, but what exactly does a B- or a B+

[645] Ibid.

really mean in terms of a problem like Y2K? Based on the information Horn put out while giving his report cards, one can clearly make sense of the way that the grades were tabulated, and yet the question that lingered around the report cards was how high of a passing grade would really be needed? After all, as a final grade, a B+ was certainly not as desirable as an A. But a B+ is still a passing grade. Is it not?

While the report cards banished arcane techno-babble with easily comprehensible letter grades, they in turn created more information that could be easily spun in questionable directions. Throughout the Y2K hearings, a common refrain from those testifying and those conducting the hearings, was a very real desire not to contribute to the level of apocalyptic paranoia that some were ginning up around Y2K. Members of congress, as well as the executive branch, wanted to make it very clear that Y2K was serious, but they did not want to suggest that it would bring about the downfall of civilization—and they did not want overblown worries about Y2K to spark panicked activities (like bank runs) that could genuinely lead to bigger problems. Yet for those prophesizing doom, the report cards (especially the early ones) could be held up as proof that the worst was coming. The cover of Donald McAlvany's *Y2K Crisis: Preparing for the Coming Computer Crash* features a burning computer that had crashed to the ground, but rather than feature a summary of the book's contents, the back cover featured a USA Today headline reading "Government earns an 'F' in Fixing Year 2000 Woes" alongside a reproduction of that failing report card.[646] Similarly, Grant Jeffrey reproduced that failing report card in his *Millennium Meltdown: Spiritual and Practical Strategies to Survive Y2K*, alongside

[646] Donald S. McAlvany. *Y2K Crisis: Preparing for the Coming Computer Crash!* (Phoenix: Western Pacific Publishing Co., 1998).

the most dire of quotations from Horn's press conferences at the release of the report cards.[647] Shaunti Feldhahn, in her book *Y2K The Millennium Bug: A Balanced Christian Response*, warned that "It is highly likely that certain critical government agencies…may not be completely ready for the rollover" and to support this claim presented one of Horn's "D" report cards.[648] In the best-seller *The Millennium Bug: How to Survive the Coming Chaos*, Michael Hyatt compared the 1996 and 1997 report cards, noting that compared to the 1996 report card, by 1997 "things had become even worse."[649] By seizing upon particularly bad report cards it was possible to suggest that the problem was simply too big, and that it would not be solved in time. Amongst those who already had a distrust of information coming from the government, the fact that a prominent Congressman was giving the federal government an F suggested that the reality must be even worse than that failing grade. Part of the challenge here is certainly connected to the fact that the publishing timeline for books and the release of quarterly report cards occur at different rates. Thus, books referring to report cards from 1997 and 1998 could continue to give a particularly grim picture by not having the report cards from 1999 for comparison. Furthermore, it was all too easy to treat the report cards as final definitive grades, as opposed to being the sorts of warning sirens that Horn had clearly intended them to be. This point was highlighted by Dave Hunt in his jeremiad to his fellow Christians that their apocalyptic predictions around Y2K would ultimately undermine their proselytizing, as Hunt noted in regards to Horn's

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[647] Grant R. Jeffrey. *Millennium Meltdown: Spiritual and Practical Strategies to Survive Y2K.* (Wheaton: Tyndale House Publishers, Inc., 1998). 114-118.
[648] Shaunti Christine Feldhahn. *Y2K The Millennium Bug: A Balanced Christian Response*. Sisters: Multnomah Publishers, 1998. 85.
[649] Michael S. Hyatt. *The Millennium Bug: How to Survive the Coming Chaos.* New York: Broadway Books, 1998. 111.

subcommittee report of 1998, "This is a wake-up call; it is not a doomsday pronouncement, yet the alarmists present it as such."[650]

While the report cards lent themselves to a certain degree of exaggeration and misuse by some, there were others who responded to Horn's report cards with a certain sense of frustration. After the initial report card was issued in 1996, responsibility for assigning grades largely fell to Horn—and though he always made clear that his grades were based on the quarterly reports being delivered to the GAO, the grades were still largely one person's opinion, and the grading rubric could change unexpectedly between grades. Thus, even though the aura of the various committee hearings tended to be pleasantly convivial in a bipartisan way, the subcommittee's report in 1998 clearly showed that many of the Democrats on the subcommittee did not feel that Horn was giving the executive branch (controlled by a Democratic president) enough credit. In the hearings, Horn would regularly spar with Koskinen, and while Horn had a tendency to focus on the work that was not being done, Koskinen consistently responded by highlighting all of the progress that was being made. In press coverage of the November 1998 D report card, Horn warned that unless the HCFA "accelerate[s] its efforts dramatically, the failure of Medicare's systems is inevitable," but the HCFA administrator Nancy Ann Min DeParle retorted that "Medicare beneficiaries need not worry" while emphasizing that her department was "on schedule to meet the government's March 31, 1999 deadline."[651] Agency frustration with Horn's grades may have best been captured in a hearing on the Department of Defense's readiness from 1999 in which Arthur L. Money (from the office of the Assistant Secretary of Defense) complained that "Every time you put out a report card for us…my office…would get letters from

[650] Dave Hunt. *Y2K: A Reasoned Response to Mass Hysteria.* Eugene: Harvest House Publishers, 1999. 70-71.
[651] Barr. "Mixed Gains Against a Glitch." A17.

the general public. We have 10 people, or thereabouts continuously responding to the private citizen. I would rather have those 10 people off working on Y2K compliance versus answering mail."[652] This sparring over the severity of the report cards continued right up to the final report card, where even as Horn issued a final B+, the agencies that were still receiving low marks retorted that they were ready to go, the only D in the final report card went to the Justice Department, and Assistant Attorney General Stephen R. Colgate told *The Washington Post* that the grade was "undeserved."[653]

Over the course of four years, Horn's subcommittee held numerous hearings with ominous titles ending in question marks. And the content of those hearings generally meant that in response to questions ranging from *Is January 1, 2000 the Date for Computer Disaster?* to *Y2K Technology Challenge: Will the Postal Service Deliver?* to *Y2K and Nuclear Power: Will the Reactors React Responsibly?* the response tended to be something along the lines of "maybe." Yet nearly a month into the year 2000, when Horn and Morella's subcommittee's met for one last Y2K hearing the response to the hearing's titular question of "did the world overreact?" was met with a resounding "no." Looking back at 43 hearings, and 10 report cards, Horn stated "We prodded, we questioned, and we hoped for the best, and the best happened."[654] Considering the massive expenditures that had gone into Y2K—over $100 billion in the US alone—Horn asked "Was the money well spent? Of course it was…This was a massive problem

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[652] U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and the Committee on Science. *Oversight of the Year 2000 Problem at the Department of Defense: How Prepared Is Our Nation's Defense?* 106th Cong., 1st sess., March 2, 1999. 116.
[653] Barr. "Y2K Critic Gives U.S. a B-Plus." A25.
[654] U.S. Congress. House. Joint Hearing before the Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and the Subcommittee on Technology of the Committee on Science. *Year 2000 Computer Problem: Did the World Overreact, and What Did We Learn?,* 106th Cong., 2nd sess., January 27, 2000. 2.

that required a massive solution."[655] Morella struck much the same tone, noting "In my mind, there is no doubt the problem was real," going on to add "the fact that nothing of disastrous proportions happened does not mean that nothing would have happened."[656]

And as was made clear at the hearing "that nothing of disastrous proportions happened" did not mean that "nothing" happened. As Horn noted, "Some glitches did occur, however, giving cause to wonder what might have happened if the work had not been completed."[657] Horn went on to references issues the Defense Department had encountered with some of its surveillance satellites, issues some retailers had encountered processing credit cards, a bank in the Chicago area that had problems with Medicare payments.[658] And these were but some of the hundreds of Y2K related issues that did occur.[659]

While it is certainly, and luckily, true that Y2K did not result in any catastrophic failures, it is also true that Y2K did not pass without incident. There were great improvements that took place in order to prepare for Y2K, and while there were no computers that turned into pumpkins when midnight hit, and there were no computers that began raining down from the sky onto unsuspecting pedestrians below, there were still plenty of areas where more could have been done.

In other words, the US deserved a B+.

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[655] Ibid.
[656] Ibid. 6.
[657] Ibid. 2.
[658] Ibid.
[659] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Y2K Aftermath—Crisis Averted, Final Committee Report.* 106th Cong., 2nd sess., February 29, 2000. S. Prt. 106-42. 37-49.

Paul Revere, not Chicken Little

Speaking at the National Press Club on July 15, 1998, Senator Robert Bennett figuratively donned the garb of an American legend. As he described the work he and his fellow senators on the Senate's Special Committee on the Year 2000 Technology Problem had undertaken, he stated "We have tried to be the Paul Revere. But I tell people we're not yet Chicken Little."[660] Bennett was careful to put some distance between himself and the most alarmed voices that were spreading fear about Y2K across the Internet, noting "I'm not yet ready to say that the sky is falling," but he still made clear to those in the audience that "The British are, indeed, coming."[661] Alluding to a well-known fable and a figure out of the United States' foundational mythology, Bennett was acknowledging that those who spoke about Y2K were sometimes mocked as hyperbolic prophets of doom, but by placing himself squarely in the revered camp of Paul Revere, Bennett sought to place himself in the tradition not of overreacting animals but of brave patriots who sought to rouse a sleeping populace to an incoming threat.

In his initial reference to Paul Revere before the National Press Club that day, Bennett had spoken of his fellow committee members as making up a "we" of Paul Reveres. Yet, shortly after that comment he had also referred more directly to himself, "As the Paul Revere of this particular challenge."[662] Granted, this address was not the first time that Bennett sought to draw a parallel between himself and Revere, a point that was driven home in the introductory remarks before Bennett spoke that day, wherein the president of the National Press Club, Dough Harbrecht, noted "Our speaker today, Senator Bob Bennett, sees himself as the Paul Revere of

[660] Bennett. "Paul Revere Not Chicken Little: Who's Sounding the Call for the Year 2000?" July 15, 1998.
[661] Ibid.
[662] Ibid.

the information age."[663] But despite all of the invocations of Revere, as Bennett explained the Y2K problem to the audience, and the state of the work being done to respond to it, he wryly acknowledged "I'm beginning to sound a little like Chicken Little."[664] Though he made clear that "the only reason I am not Chicken Little yet is that we have 17 months in which to get from here to there."[665] In other words, the sky was not falling…but it still might.

Senator Robert Bennett was arguably the most visible Senator, and perhaps the most visible member from either chamber of Congress, speaking out about Y2K. As chair of the Senate's Special Committee on the Year 2000 Problem, Bennett played a significant role in setting the tone of the hearings that the committee held, a tonality that comes across clearly in the three reports the Special Committee produced (two of which came out before the changeover date, and one of which came out after). While other members of the Special Committee, notably the co-chair Senator Christopher Dodd, were also highly engaged with the issue, Bennett was the figure the press usually sought out for quotes—as his role as the chair of the Special Committee bestowed him with an automatic aura of authority. Furthermore, given that Senator Bennett was a Republican, he could be treated as something of a foil to officials appointed by President Clinton's Democratic administration, or Democratic Congress members unwilling to harshly criticize the work of Clinton's administration. And yet in the public addresses that Senator Bennett made, one also gets the sense that he was quite pleased to be able to position himself "as the Paul Revere of this particular challenge." The Senate's Special Committee on the Year 2000 Problem, and its reports, represented one of the central ways in which information about Y2K was conveyed to the American public, and as the chair of that Special Committee focusing on

[663] Ibid.
[664] Ibid.
[665] Ibid.

Senator Bennett provides a fruitful way not only to consider the actual activity and outputs of that committee, but to consider another attempt to explain Y2K to the public.

The honor of holding the first Y2K related Congressional hearing fell to the House of Representatives, not the Senate.[666] Indeed, it was not until more than a year after the House's Committee on Government Reform held its ominously titled "Is January 1, 2000 the Date for Computer Disaster?" hearing, that the Senate held its first Y2K hearing with the significantly less exciting title of "U.S. Financial Institutions and Federal Regulatory Agencies Management of the Year 2000 Computer Problem."[667] The Senate's first Y2K hearing, which was conducted over two days, was held on July 10, 1997 and continued a few weeks later on July 30, 1997, these hearings were not conducted by the Special Committee, for the Special Committee had not yet come into existence—though the events at this initial hearing set the events into motion which would result in the eventual creation of the Special Committee. Rather, this hearing took place before the financial services and technology subcommittee of the committee on banking, housing, and urban affairs—a subcommittee that happened to be chaired by none other than Robert Bennett (with Christopher Dodd being amongst the members of the subcommittee).

While Senator Bennett's prepared opening statement for the Senate's first Y2K related hearing did not make reference to Paul Revere, the comments he made at the beginning capture the tone that was to be characteristic of Bennett's comments throughout the course of the computing crisis. Bennett began by acknowledging the increasingly important role that computers had taken on over the previous two decades in everything from individual households,

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[666] U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and Oversight. *Is January 1, 2000, the Date for Computer Disaster?* 104th Cong., 2nd sess., April 16, 1996.

[667] U.S. Congress. Senate. Subcommittee on Financial Services and Technology of the Committee on Banking, Housing, and Urban Affairs. *U.S. Financial Institutions and Federal Regulatory Agencies Management of the Year 2000 Computer Problem.* 105th Cong., 1st sess., July 10 and 30, 1997.

to businesses, and to the government, noting "We have marveled at the way computers have simplified our lives."[668] And yet, that which once "marveled" now threatened, as he noted for "the Year 2000 Problem" meant that "computers threaten for the first time to make life more difficult."[669] Referencing *Newsweek*'s hyperbolic frontpage coverage of Y2K as "the day the world shuts down," Bennett warily acknowledged this Chicken Little like perspective while emphasizing that business leaders could not simply laugh off the issue. Indeed, as Bennett described it, Y2K "is precisely the type of seismic event that could shake the foundations of modern business and government."[670] Having become so reliant on computerized systems, businesses and government were now at the mercy of those systems. Hardly mincing words, Bennett stated that businesses that did not take the necessary actions "could be committing corporate suicide."[671] Though Bennett's comments, with their allusions to computers throughout society, clearly framed Y2K as a threat that was not solely one for financial services, Bennett noted that due to its particularly high reliance on computerized systems the financial services industry would be "particularly susceptible" to Y2K, thus in calling this hearing Bennett noted that the committee hoped to be able to make "a realistic assessment of the Year 2000 problem."[672]

The witnesses at the hearing, a mixture of technical experts and figures from the banking industry, described a problem which was either "all-pervasive" or at the very least

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[668] U.S. Congress. Senate. Subcommittee on Financial Services and Technology of the Committee on Banking, Housing, and Urban Affairs. *U.S. Financial Institutions and Federal Regulatory Agencies Management of the Year 2000 Computer Problem.* 25.
[669] Ibid.
[670] Ibid.
[671] Ibid.
[672] Ibid.

"pervasive."[673] The problem was described as one that the financial sector had known about, and had been working on fixing, since the early 1990s, but for which much work remained to be done even as the deadline grew closer. Witnesses expressed confidence that the big banks were doing sufficient work, while noting they had relatively less confidence that smaller banks would be prepared—and given the close interconnections within the banking world, there were also worries that banks in the rest of the world were not doing enough. The witnesses at the hearing also made it clear the extent to which discussions of impending doom had already become something that had to be picked through in attempts to reach "a realistic assessment." In his opening remarks, Larry Martin the president of Data Dimensions Inc. (a technology consulting company that had been working on Y2K related issues since 1991), skipped Chicken Little and Paul Revere to go back to the patron saint of alarmists, as he attributed slow responses to the threat of Y2K as being related to "the natural human tendency to disregard the Cassandras who predict doom."[674] This comment stands in contrast to the comments from Jeff Jinnett, President of LeBoeuf Computing Technologies (a subsidiary of a law firm, also working on Y2K related issues) who highlighted the need for the subcommittee before which he was testifying to act as a source of reliable information in order to respond "to unsubstantiated Year 2000 'doomsday' articles in the public press."[675] Articles like the *Newsweek* cover story that Bennett had mentioned in his own opening remarks.

To the extent that the public discourse around Y2K had already become muddled as a result of competing narratives of onrushing catastrophe on one side, and a relatively fixable technical problem on the other, this muddling was also felt by some at the hearing. Senator

[673] Ibid, 3 and 7.
[674] Ibid, 2.
[675] Ibid, 12.

Connie Mack decried the "mixed message" coming across in the hearing, acknowledging that the main attitude was "that we have to make sure that people don't overreact to the doomsday kind of message," even as he noted that the testimony he had heard that day "kind of runs me back over to this side over here where this doomsday message is."[676] Mack's comments were met with laughter, but in responding to these concerns Jinnett mainly wound up echoing them, explaining "What we are trying to say it's neither doomsday, nor no problem. It is somewhere in between."[677] Much still remained unclear as the initial hearing came to a close, but the hearing did make clear what step should be taken next. The witnesses had urged the Senators to convene a follow-up hearing in which they summoned financial institution regulators to testify, and thus twenty days later the subcommittee reconvened.

The language of "pervasiveness" that had been so pervasive at the previous hearing could now be found in Bennett's opening commentary. Speaking of a letter he and Senator D'Amato had sent to regulators requesting information about the progress of the financial industry, Bennett acknowledged that Y2K could be "vexing" as it required "enormous financial commitment on which there is zero rate of return."[678] Except, that is, for companies being able to stay in business. The line between hope and dread was once more navigated as Bennett noted positively that 70 percent of financial institutions claimed to "have some plan in place," though even in this silver lining could be found another cloud insofar as "few, if any" of those institutions had yet truly become Y2K compliant.[679] One of the challenges confronting Bennett and the Subcommittee, a challenge that proved a consistent one across governmental efforts to push for

[676] Ibid, 23.
[677] Ibid, 24.
[678] Ibid, 49.
[679] Ibid.

greater Y2K compliance, was the extent to which private companies could not be forced to prepare for Y2K. Awareness could be raised, the threat of possible litigation could be expressed, but in most cases whether or not a private company fixed its computers, was up to that private company. Thus, in summoning financial sector regulators, the Subcommittee had before it people who could actually exert greater pressure. While the initial hearing had been about making a "realistic assessment," Bennett explained the reason for the second hearing as being "to have the regulators use their influence to increase awareness of this problem," and "to encourage remediation efforts" in the US and abroad.[680]

The regulators testifying included representatives from the FDIC, Office of Thrift Supervision, SEC, Federal Reserve System, and the Comptroller of the Currency was present. The comments from the regulators were not wholly different from the types of comments that had been previously given from representatives of the entities being regulated: much was said about the level of awareness and initial steps being taken, even as compliance remained a destination that had not yet been reached. Eugene Ludwig, the Comptroller of the Currency, applauded the hearing for its role in helping to "raise public awareness" even as he acknowledged "time is short."[681] The themes of overall societal reliance on computers and the acknowledgement that particular sectors of society—such as the banking industry—were particularly reliant on computers was a recurring theme throughout the testimony. Representatives of the various regulatory agencies emphasized the work they had been doing to raise awareness within the sectors of the financial industry they represented, while counseling that Congress not act too hastily in trying to push through Y2K related legislation. Arthur Levitt,

[680] Ibid, 51.
[681] Ibid, 57.

Jr., chairman of the SEC, captured a sentiment shared by many of the regulators testifying when he noted "the laws currently in place are sufficient at this time to cover reporting obligations."[682] Given the limited time remaining, the concern was that passing new laws that introduced additional reporting requirements would just force financial institutions to divert attention from the actual compliance work. And in the back of all of this was a recognized need not only to ensure that the banks did not crash, but the need to push back on the doomsday narratives that might diminish the public's faith in the financial sector.

After all, even if the banks were ready, public perception that they were not might result in a panicked public rushing to withdraw money on December 31, 1999—a panic which could result in real problems. The explanations from the regulators seemed to somewhat calm the nerves of the Senators on the subcommittee; Senator Enzi spoke of having "a lot more confidence" having "heard from the regulators."[683] Though even as he admitted that "those of us that sit on this side of the table are not immune to engaging in hyperbole form time-to-time," Senator Dodd reminded his fellow Senators that words like "terrifying" were being used to discuss Y2K by CEO's of large financial institutions.[684] And even as Ludwig had noted "there are only about 100 weekends remaining to complete any necessary computer recoding and testing," Senator Bennett closed the hearing by reminding all of those present "this problem must, in fact, be solved long before December 1999."[685]

Reminiscing about those initial hearings in his comments before the National Press Club, Bennett recalled that when the meeting had ended Dodd, who had been present for the entirety of

[682] Ibid, 60.
[683] Ibid, 74.
[684] Ibid, 70.
[685] Ibid, 57.

the hearing, turned to him and said "Mr. Chairman, we need another hearing. This is pretty scary stuff."[686] A comment to which Bennett recalled himself replying "You're exactly right."[687] And thus the subcommittee, still not the Special Committee, reconvened on October 22, 1997 for another session on "Year 2000 Liability and Disclosure."[688] In his opening comments as he called the hearing to order, Bennett looked back at the prior hearings and noted, "After holding a second hearing it became apparent that this is going to be a larger problem than we thought."[689] Compared to his opening comments at the initial hearing, by this point Bennett's opening remarks conveyed the scale of the risks in much greater detail—blending an outlining of the problems represented by Y2K with frustration that so many in the business community still seemed to be procrastinating. As Bennett noted Y2K was "a pervasive issue" that lacked a "quick-fix" and this was related to the ways in which "Businesses in today's world rely on computer systems for virtually every aspect of their operation."[690] Here Bennett modified his worries about Y2K related technical failures to also speak of the danger posed by Y2K related litigation, warning that there were estimates of "more than a trillion dollars worth of litigation lurking in the next century."[691] As the hearing's title indicated, one of the matters to be addressed in the session was the responsibility of financial institutions to disclose their Y2K preparedness status, and if Congress should pass legislation to protect the institutions that disclosed in good faith. But, putting it in more colorful terms, having begun the hearing by outlining "that much of

[686] Bennett. "Paul Revere Not Chicken Little: Who's Sounding the Call for the Year 2000?" July 15, 1998.
[687] Ibid.
[688]U.S. Congress. Senate. Subcommittee on Financial Services and Technology of the Committee on Banking, Housing, and Urban Affairs. *Year 2000 Liability and Disclosure.* 105th Cong., 1st sess., October 22, 1997.
[689] Ibid, 1.
[690] Ibid.
[691] Ibid, 2.

a doomsday kind of scenario," Bennett turned to the witnesses to "lead us through the thicket and turn doomsday into sunshine."[692]

Alas, as was becoming something of a recurring feature of these hearings, the witnesses primarily provided a tour of the thicket, and even if there were moments of sunshine that pierced through the dense tangle these were not sufficient to destroy the thicket. Witnesses spoke to the scale of the crisis facing financial, and non-financial institutions, and similar to Bennett acknowledged the threat of litigation. Though the witnesses were not in disagreement about the reality of the danger, they were not in full agreement about solutions. Jeff Jinnett, who had previously testified, recommended "safe harbor" legislation to protect from punitive damages institutions that had made "a good faith effort to become Year 2000 compliant."[693] While Dana McDaniel, a commercial trial lawyer from the firm of Williams, Mullen, Christian, and Dobson, argued that "current law is sufficient" and warned that "bad or unique facts could make bad or unique law."[694] And in speaking of the Information Technology Association of America's (ITAA) Y2K certification program, the ITAA's president Harris Miller, noted that 45 organizations had already been certified, with 12 more currently undergoing the process—though Miller also emphasized that certification was not an easy process and that several organizations had not passed the review.[695]

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[692] Ibid, 3.
[693] Ibid, 5.
[694] Ibid, 7.
[695] Ibid, 10-11. It is also worth noting that Miller gives some of the credit for the ITAA starting to offer these certifications in response to a request that Congressman Stephen Horn had made for the IT industry to be more proactively involved at the first Congressional Y2K hearing in April of 1996.

Though Bennett was not the only Senator in attendance,[696] the questions he directed to the assembled witnesses demonstrated that as chairman he was taking the matter of Y2K quite seriously. Thus, Bennett provided the witnesses with an anecdote that he described as possibly being "the first recorded Year 2000 meltdown."[697] In the anecdote, an unnamed person from Bennett's home state of Utah, took "a name-brand calculator watch" and in order to see what would happen advanced the time and date to 11:59 p.m., December 31, 1999.[698] And when "midnight came," apparently "the display went black" and all attempts to reset the watch were to no avail, even changing the battery did not fix the problem.[699] Taking the watch to be properly repaired, the watch's owner was informed that "one of the gates in the chip had frozen in the open position" which had "fried the chip" and now this name-brand calculator watch "was useless."[700] The story was anecdotal, Bennett provided no names or other identifying details, yet what mattered was that in the context of the hearing it seemed plausible, as did Bennett's comment that such an experience might inspire some consumers to file a lawsuit. Demonstrating his grasp of the issue, later in the hearing, Bennett spoke, again anecdotally, of his encounters with those who were certain "Bill Gates is going to figure something out and we will all buy it from him," emphasizing that there was no one-size-fits-every-computer-language solution and also that even if there was, time would still be needed for testing.[701] And alluding back to his

[696] Other Senators in attendance at this hearing were: Senator Grams, Senator D'Amato, and Senator Hagel. Senator Dodd was not in attendance at this hearing.
[697] Ibid, 20.
[698] Ibid.
[699] Ibid.
[700] Ibid.
[701] Ibid, 30.

story about the fried watch in Utah, Bennett noted that it was not always clear where the troublesome code was lurking.[702]

Bennett's comments, conduct, and questions in the subcommittee hearings he chaired made it abundantly clear how seriously he was taking the matter. And in November of 1997, he sought to share his concerns with President Clinton, writing him in order to urge him to create an office within the Executive Branch to address Y2K.[703] In writing to Clinton, Bennett backed up his plea for action by referencing the investigative work he had been doing over the previous year, noting starkly that "My investigation has left me with little confidence that government agencies and private businesses are taking the necessary steps to prepare for the century date change."[704] Evoking unsettling images of "being in an airplane at a time when air traffic control fails, in surgery when operating room systems fail, or even in need of cash when ATM machines no longer recognize valid account numbers," Bennett sought to bring Y2K dramatically to life for Clinton.[705] Drawing specifically on testimony that had been given before his subcommittee, Bennett warned Clinton that much remained to be done while time was running out, and also brought up the hair-raising specter of massive litigation costs. Bennett noted that he had concluded "that the year 2000 problem is a national crisis which warrants special government action," and given the consequences of failure, Bennett was urging Clinton to make Y2K a priority.[706]

Even as Bennett pushed for the Executive Branch to do more, he was simultaneously pushing for Y2K to be made more of a priority within the Senate. Recalling that moment, as he

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[702] Ibid.
[703] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Investigating the Impact of the Year 2000 Problem: The 100 Day Report.* 213.
[704] Ibid.
[705] Ibid.
[706] Ibid, 214.

spoke before the National Press Club, Bennett remembered going to Senator Lott, and encouraging Senator Dodd to go to Senator Daschle, to tell them "This problem is serious enough it needs more than just the jurisdiction of the Banking Committee."[707] This statement, according to Bennett, provided the impetus out of which the resolution creating the Senate Special Committee on the Year 2000 Technology Problem was born. Submitted by Lott and Daschle, on April 2, 1998, Senate Resolution 208 established the Special Committee on the Year 2000 Problem.[708] According to the resolution, the Special Committee was tasked with three responsibilities: "to study the impact of the year 2000 technology problem" as it pertained to the government and private sector (in the US as well as abroad), "to make such findings of fact as are warranted and appropriate" in response to that studying, and where necessary to make recommendations for "new legislation and amendments to existing laws."[709] The Special Committee's membership was to be made up of seven members (four Republicans and three Democrats), and the Special Committee was empowered to conduct hearings, receive testimony, and even "to require, by subpoena or otherwise, the attendance of witnesses."[710] The Senate Resolution laid out an expectation that "at the earliest practicable date" the Special Committee would "report its findings."[711] The resolution established the Special Committee until February 29, 2000.[712]

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[707] Bennett. "Paul Revere Not Chicken Little: Who's Sounding the Call for the Year 2000?" July 15, 1998. Note: at the time, Senator Lott was the Senate Majority Leader, and Senator Daschle was the Senate Minority Leader.
[708] U.S. Congress. Senate. *To Establish a Special Committee of the Senate to Address the Year 2000 Technology Problem.* S. RES. 208. 105th Cong., 2nd Sess., April 2, 1998. (https://www.congress.gov/105/bills/sres208/BILLS-105sres208ats.pdf).
[709] Ibid, 1-2.
[710] Ibid, 2-4.
[711] Ibid, 6.
[712] Ibid.

With less than two years remaining before the arrival of the year 2000, the establishment of the Special Committee was a significant step in conveying the seriousness with which the US government was taking Y2K. While numerous hearings had been taking place in both chambers of Congress prior to the establishment of the Special Committee, it shifted Y2K from being a subject of interest when it wandered into the purview of a particular committee, and instead elevated Y2K to a level wherein it warranted a committee whose focus was Y2K itself. The creation of the Special Committee also served to elevate Bennett's stature as the Senate's leading voice on Y2K, as he was now the chair of the committee that was explicitly "on the Year 2000 Problem." Yet the most significant aspect of the establishment of the Special Committee is arguably the reports the committee issued. While individual hearings and government reports prepared in response to requests from the committee could be quite significant, 1998 and 1999 saw a deluge of information coming out about Y2K; however, the reports issued by the Special Committee synthesized this material, and bore the stamp of governmental authority. These reports, which shall be discussed further in this chapter, did not have quite the same attention-grabbing simplicity as Representative Horn's Y2K report cards, but they provided a seemingly authoritative account of the state of preparation as the year 2000 approached. And considering that the Special Committee was chaired by a Republican Senator, the reports also seemed to be less self-serving than some of the statements being issued by the Clinton administration. Of course, before the Special Committee could issue any reports, it first had to get to work.

600 days remained until January 1, 2000, when Senator Bennett took to the Senate floor on May 11, 1998, speaking now as the chair of the newly created Special Committee he rose with the goal of informing his colleagues in the Senate, and "any who are listening over C-

SPAN," about his plans for the Special Committee.[713] Summarizing the problem, Bennett spoke of "three areas of concern about Y2K": the first was the software problem itself, the second was the challenge represented by embedded chips, and the third dealt with the matter of connections, as "everything in the computer world is connected to everything else in one way or another."[714] Beyond the core software problem, this matter of interconnectivity represented a particularly perilous problem, as it showed that computer problems could not be seen in isolation—non-compliant computers could still cause compliant computers to fail. Bennett joked that what the Special Committee would really like would be "to pass a resolution saying that we have an extra 2 or 3 years," but delaying the arrival of the year 2000 was not within the power of the Senate, or the President for that matter.[715] Having identified the three problematic areas, Bennett went on to note the seven areas that the Special Committee would be prioritizing, these were: utilities, telecommunications, transportation, financial services, general government services, general manufacturing, and litigation.[716] Previously, investigating the impact of those matters would have been the responsibility of a range of different committees and subcommittees, but the Special Committee could act as a "coordinating point" for those working in those various areas.[717]

In his comments Bennett was laying out the work that the Special Committee would be doing, and though he made clear how much work there was to be done, and how little time there was in which to do it, he also noted "it is not all doom and gloom…we should not lose sight of

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[713] Robert Bennett. "Countdown to the Year 2000: A Prioritized Approach to the Millennium Bug." (http://www.senate.gov/~y2k/speeches/bennett980511.htm: May 11, 1998); archived at *Wayback Machine* (http://web.archive.org/web/20001117151200/http://www.senate.gov/~y2k/speeches/bennett980511.htm).
[714] Ibid.
[715] Ibid.
[716] Ibid.
[717] Ibid.

the fact that there is good news and there is progress being made."[718] Nevertheless, Bennett chose not to end on that relatively optimistic note. In closing, Bennett spoke of a conversation he had with a friend of his in which Bennett had called Y2K an unprecedented challenge only for his friend to correct him. In Bennett's telling, his friend said there was a "historic example," namely: "The Tower of Babel."[719] In that biblical tale, the people "decided they were going to build a tower to heaven, and God didn't like it, so he fixed it so they could not talk to each other and that ended it," and Bennett's friend suggested that Y2K was much the same as it presented the possibility that after January 1 "we cannot talk to each other because the world is all wired by computers."[720] Though, in quoting his friend, Bennett was not making an explicit suggestion that God was behind Y2K, or that computers were a symbol of humanity's hubris, there were certainly plenty of individuals on the doomsday fringe making that connection. But in the face of another possible confusion of tongues, Bennett expressed the belief that if the problem was handled seriously, people would be able to look back at "something as serious as the Tower of Babel" and sigh in relief that it wound up being "a bump in the road instead of a drive off the cliff."[721]

Ten days before the Special Committee held its first hearing, Senator Bennett provided the keynote address at the Center for Strategic and International Studies conference "The Y2K Crisis: A Global Ticking Time Bomb?"[722] Participating alongside major Y2K communicators like Peter de Jager and Edward Yardeni, as well as prominent Y2K figures within the computing community such as Bruce Webster and Howard Rubin—Bennett's presence at the conference

[718] Ibid.
[719] Ibid.
[720] Ibid.
[721] Ibid.
[722] Arnaud de Borcgrave and Bradley D. Belt (co-chairs). *The Y2K Crisis: A Global Ticking Time Bomb?* Washington, D.C. June 2, 1998. The Center for Strategic and International Studies.

further demonstrates how he had become one of the most prominent government voices on Y2K, and was simply becoming one of the most prominent voices on Y2K full stop. The introductory remarks acknowledged that some people believed "the alarmists are simply Chicken Littles," but Bennett was introduced as "the Paul Revere on this issue" and in changing references again was also compared to the prophet Jeremiah as "the lonely voice in the wilderness in the United States Congress about the challenges presented by Y2K."[723] And though it is not fair to the other members of Congress who had been working diligently on the issue to call Bennett "the lonely voice," his position as a Senator, and now the chair of the Special Committee, bestowed upon Bennett visibility and authority.

Compared to the other speakers at the CSIS conference, Bennett's comments were thin on extensive technical detail or detailed economic prognosticating. Indeed, his speech demonstrates that in talking about Y2K Bennett would come to repeat various stories from one audience to the next. Yet speaking at a conference alongside numerous other figures with greater technical expertise, Bennett emphasized that Y2K was much more than just an IT problem. For what made Y2K so challenging was not the technical complexity of the problem, but the number of systems that needed to be checked/fixed/tested and the limited time that remained in which to do all that work. As Bennett noted "this is a management problem every bit as much as it's a technology problem."[724] It was also a problem that required "people thinking beyond the narrow lines of their own organizations," because it would not be enough for a company to fix its own computers if a key supplier on which they relied was not similarly prepared, or if the grid was to fail due to Y2K related issues. Outlining his priorities for the Special Committee, Bennett

[723] Ibid.
[724] Ibid.

referenced the same seven areas that he had spoken of in his statement on the Senate floor a few weeks earlier. And in summarizing his "assignment…as Chairman of the Senate Committee," Bennett explicitly framed it as needing to "be Paul Revere" while at the same time noting that he needed to "not be Chicken Little."

Considering Y2K, Bennett emphasized "that the British indeed are coming" but this warning was needed to rally the populace to repel the attacking force, not cause people to run for shelter—especially as an attitude of all is lost could "turn into a self-fulfilling prophecy" in an eighteen month period in which action was essential.[725] This balance between Paul Revere and Chicken Little was summarized by Bennett's closing remark "Don't panic, but don't spend a lot of time sleeping either."[726] Given his company at that CSIS conference, it is unlikely that any of Bennett's fellow speakers learned much from Bennett. After all, many of them had been sounding the alarm on Y2K far longer than he had, but insofar as many of those speakers had been struggling to raise awareness—Bennett's presence at the conference was a clear statement that people were now paying attention. True, there was still a need for more people to warn "Y2K is coming," but it helped if one of the people shouting that was the chair of a Senate committee working specifically on that issue. Outlining the seven key areas of focus for the Special Committee, Bennett had told the CSIS gathering that the top priority level was the matter of utilities, for when it comes to computers "if you don't have any power to turn them on" it will not matter whether they are Y2K compliant or not.[727] And this prioritization was made clear, by the Special Committee's first hearing.

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[725] Ibid.
[726] Ibid.
[727] Ibid.

"We have become a highly automated society. Technology has made our lives easier on the one hand, but highly dependent on automation on the other. If we do not aggressively address the Year 2000 problem, the consequences could be devastating"—these were amongst the words with which Senator Bennett began the Special Committee's inaugural hearing on June 12, 1998.[728] In his opening remarks that day, Bennett not only introduced the hearing, he also laid out the agenda for the Special Committee and clarified what he saw as its role. Noting that the committee's jurisdiction empowered it to consider the public and private sector, Bennett placed the Special Committee in something of an informational role, noting that a function of the committee would "be to allay false rumors and concerns as well as expose genuine concerns and raise significant issues."[729] And though Bennett was thus framing the role of the committee as being something of a reliable clearinghouse for trustworthy information, he also noted that based on the information he had at the time of that initial hearing, "I cannot be optimistic, and I am genuinely concerned."[730] Those anxious comments were made in reference to some of the particular challenges facing utilities and the national power grid, but as Bennett had noted a few days earlier at the CSIS event, as reliant as modern society had become on computers those computers were still themselves reliant on electricity.

With less than two years remaining until the deadline, Bennett expressed frustration and concern that Y2K was still "not receiving sufficient attention," and that the voices on Y2K that were being elevated were "the absolute alarmists" moaning "it is too late" and telling people "to

[728] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Utilities and the National Power Grid.* 105th Cong., 2nd sess., June 12, 1998. 1.
[729] Ibid, 2.
[730] Ibid.

prepare to become hunter-gatherers for the next 5 years."[731] And as Bennett noted, "that kind of attention is not going to get us to where we need to be to get the problem solved."[732] Having just upbraided those declaring "it is too late," Bennett expressed concern that by the time Y2K achieved sufficient public concern, "it will be too late" for that public worry to translate into remediation efforts, and Bennett worried that this could spark "a measure of panic" which would stymie Y2K related remediation efforts.[733] Even as Bennett lamented the lack of attention Y2K was receiving, his opening remarks drew on reporting from the likes of *U.S. News and World Report* and *USA Today* to point to problems that were already occurring and segments of the economy at particular risk. There was nothing technophobic about Bennett's remarks, but even as he spoke of "the magic of modern technology,"[734] his foreboding tone seemed to suggest that this "magic" might have been the product of a Faustian bargain.

The Special Committee's first hearing set the template that most of its subsequent hearings would follow: moderately ominous opening statements provided by Bennett and others, followed by testimony from a mixture of representatives from the given sector, governmental figures in positions related to the sector, and figures from the Clinton administration tasked with overseeing Y2K related issues. Thus, at this inaugural hearing, witnesses represented the U.S. Department of Energy, the Nuclear Regulatory Commission, Duke Energy, the American Gas Association, and others. The testimony presented, under oath, also set something of the standard for many of the following hearings as the information provided was overcast by a certain aura of uncertainty. Certainly, the witnesses testified that the work was being done, and that individuals

[731] Ibid.
[732] Ibid.
[733] Ibid, 2-3.
[734] Ibid, 3.

were committed to getting everything done on time, but such optimistic stances were punctuated by acknowledgements of the size of the challenge ahead and an admission of how limited was the time remaining. The clash between public and private was also noted. In setting out the stakes, Elizabeth Moler, Deputy Secretary for the U.S. Department of Energy, noted that "Electricity is, of course, one of those ubiquitous things that Americans take for granted," but she also noted that "the Federal Government cannot solve this problem. It is up to the industry itself to do so."[735] And though Shirley Ann Jackson, Chair of the U.S. Nuclear Regulatory Commission, made very clear that it was conducting inspections and requiring its licensees to submit confirmation attesting to their preparedness[736]—the other witnesses made clear that not all utilities were as authoritatively regulated as the Nuclear industry. Placed in a position of "limited regulatory authority, limited powers" Moler noted that the power some of the agencies had was "the bully pulpit and the power of public scrutiny and, frankly, embarrassment."[737] Which was not altogether different from the sort of power held by the committee itself.

While the testimony from figures within the government tended to be peppered with caveats and admissions of lacking authority, comments from industry figures were more likely to emphasize how seriously the industry was taking the issue, how long it had been working on the issue, and to emphasize that extra regulation would just get in the way of the progress that was being made. Despite Louis Marcoccia, a consultant for Duke Energy, Washington Gas, and Baltimore Gas and Electric, arguing that companies should have already completed 60% of their work and therefore warning "the utility industry has not met the criteria for successful implementation of the Year 2000 for the mission-critical systems" and that this "failure will

[735] Ibid, 12-13.
[736] Ibid, 16.
[737] Ibid, 27.

cause major disruptions here in the United States and overseas,"[738] the other industry representatives testifying were significantly more upbeat. Michehl Gent, President of the North American Electric Reliability Council, spoke of the success NERC was seeing in coordinating cooperation across North American electric utilities.[739] James Rubright, a representative of the Interstate Natural Gas Association of America, emphasized that his organization was "confident that the pipeline systems will remain safe on January 1, 2000, even in the face of digital device failures."[740] And after humorously speaking of his "roots as a programmer" that made him "wish we had used four dates instead of two, now that I think about it," Gary Gardner, CIO of the American Gas Association, noted that most members of the association had already been working on the problem for years and "are prepared to handle the issues related to the Year 2000."[741] In speaking of steps that could assist them in reaching compliance, private sector representatives pushed against the idea of further regulation, though some spoke of the potential for legislation that would limit the risks of litigation or make it easier for companies to share information with each other. Nevertheless, these same representatives were quick to praise the work of the Special Committee, noting that the attention the committee was bringing to bear on the issue was of great significance.

Another significant aspect of the inaugural hearing was in how it set up the parallel between what was being done in the Senate and what was being done by the Executive Branch, as the Chair of the President's Council on Year 2000 Conversion, John Koskinen was one of the witnesses. By the time of the Special Committee's first hearing, Koskinen was already a veteran

[738] Ibid, 34.
[739] Ibid, 36-38.
[740] Ibid, 42
[741] Ibid, 43-46.

of testifying about Y2K—though mainly at hearings held by the House of Representatives. Koskinen's appointment had been hailed by several members of the Special Committee: Senator Kyl had written to Koskinen to congratulate him on his appointment,[742] and Bennett had praised Koskinen in a letter to President Clinton in which Bennett noted he was "impressed with the zeal and energy that Mr. Koskinen brings to this position. I applaud his approach."[743] Nevertheless, Koskinen was a Democrat appointed by a Democratic President, while the Special Committee was chaired by and had a majority of Republican members. Yet, an air of bipartisan esprit de corps was present at the committee, and even if there were at times some disagreement on the state of progress between members of the committee and Koskinen, the relationship was largely amiable. With his presence at the hearing on Utilities and the National Power Grid, Koskinen was there as a representative of the Clinton administration's efforts "to assist Federal agencies…and to coordinate agency efforts to increase awareness."[744] Far from being in opposition, Koskinen framed his work as being part of the same effort that the committee was making, a sentiment that Bennett highlighted by noting that he and Koskinen were speaking regularly to make sure "the excellent work he is doing" was coordinated with the work of the committee.[745] To the extent that regulators and private sector representatives had spoken of the role government scrutiny could play in urging and validating efforts, the Special Committee's first hearing (with Koskinen's presence) made it abundantly clear that the US government was taking Y2K seriously.

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[742] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Investigating the Impact of the Year 2000 Problem: The 100 Day Report.* 215.
[743] Ibid, 221.
[744] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Utilities and the National Power Grid.* 18.
[745] Ibid, 20.

Seriously yes, but also anxiously. At least that was the tone that Bennett continually injected into the hearing. While allusions to the time remaining was a common tactic to couch less than stellar news against promises of future progress, Bennett put the matter in starker detail. As he stated, "If the Y2K problem were this weekend…there is 100 percent probability that the grid would fail. I do not think there is really much debate there."[746] In other words, the sky might not fall in 18 months, but if it were not for those 18 months the sky would be falling now. In the comments with which Bennett concluded the Special Committee's inaugural hearing he maintained a rather dour position, noting "the present system is clearly in jeopardy, the jeopardy is serious, the impact on the Nation would be incalculable if it were not fixed."[747] Though he noted that the hearing had been scheduled to draw attention to precisely this issue, and Bennett hoped that it had achieved this goal.

It was a little bit more than a month after the Special Committee's first meeting that Bennett spoke before the National Press Club. Amidst Bennett's evocations of Paul Revere and Chicken Little he framed the work of his committee within the context of a race against time—only seventeen months remained. In his comments to the National Press Club, Bennett waxed nostalgically about why it was that the problem had become so pervasive. Placing the appearance of computers on a timeline alongside the Industrial Revolution, Bennett noted "the concept of digital code transformed the world in the Information Revolution," though he hastened to add that this Information Revolution was not yet finished, as he noted "we are living through that revolution in ways that future historians will look back on and comment about."[748] Speaking of how "it has become ubiquitous this digital code," Bennett lauded the economic benefits that had

[746] Ibid, 47.
[747] Ibid, 52.
[748] Bennett. "Paul Revere Not Chicken Little: Who's Sounding the Call for the Year 2000?" July 15, 1998.

come to the United States thanks to its early and impassioned embrace of computer technology.[749] Unfortunately, a programming decision that had been made to help save space (and money) in the early days of the Information Revolution had resulted in a situation where now "the flaw is everywhere."[750] Though there was a month less now, Bennett echoed his closing comments from his committee's first hearing, noting that if "Y2K were this weekend instead of 76 weekends from now" the outlook would be dire, but there was still time. And to his audience at the Press Club, Bennett highlighted the importance of awareness, telling the members of the press in attendance that by "covering it, you can affect the outcome.[751]"

For all of his talk about being Paul Revere and not Chicken Little, Bennett's comments in the question and answer session were not particularly upbeat. Though in his speech he had stated "I believe we're going to win," when questioned he noted "we have reached the point where we cannot solve the whole problem…what we have to do is start making priority choices."[752] Expressing the belief that there would be some brownouts and regional blackouts, Bennett noted that he still believed "the power grid will work," he expected some "individual banks will probably go bankrupt," and noted that he was "concerned" about the health care system, counties, air traffic, acknowledged that the "Defense Department will have serious challenges," and he also added that "FEMA, has been, shall we say, less than reassuring."[753] While Bennett made clear that he was not planning on "dumping all my shares" in anticipation of a Y2K caused market collapse, he nevertheless made clear that he planned "to document all of my financial information on paper," adding that "it might not be a bad idea to have a little extra food and

[749] Ibid.
[750] Ibid.
[751] Ibid.
[752] Ibid.
[753] Ibid.

water around," and noted "I don't think I would book a vacation on an airplane to a foreign country on New Year's Eve."[754]

Despite the ominous tones in which Bennett was sometimes speaking, with his actions he (and his committee) were working diligently to prevent the worst from happening. In multiple speeches Bennett had outlined the seven sectors that were of greatest concern, and over the course of the following month representatives from those sectors were summoned before the committee to give account of what progress they were making and what more they needed to do. As the committee's chair, Bennett sent numerous letters to potential witnesses and figures within government agencies applauding some efforts and pushing for more information from others. Often these letters to future witnesses, inquired as to the particular agency/company "overall approach to the Y2K remediation," the status of those efforts as of a particular quarter, and "any special concerns that the Committee should be aware of concerning" the particular agency/company.[755] In a letter co-signed by Bennett and Dodd, the two wrote to their Senate colleagues in October of 1998 to highlight the work the committee had done that had "greatly increased our knowledge of this problem" while drawing attention to legislative efforts the committee had made, while still pushing their colleagues to make sure Y2K was being taken seriously in their states as "Like ostriches, many are burying their heads in the sand…This complacency is very dangerous."[756] And the special committee was fighting that complacency. As 1998 came to a close, Bennett wrote to Lt. Gen. Russell C. David, Chief of the National Guard Bureau, to "take appropriate action to provide the nation with the assurances that the

[754] Ibid.
[755] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Investigating the Impact of the Year 2000 Problem: The 100 Day Report.* Two samples of such letters can be found on 229 and 230.
[756] Ibid, 227.

United States Army and Air National Guard units are prepared to act should they be needed because of Y2K-induced emergencies."[757] And in the early days of 1999, Bennett and Dodd together wrote to President Clinton urging him to put national attention on Y2K by commenting on it in his State of the Union address, urging him "In order to avoid panic later, we must preach preparation now."[758]

After its initial hearing on utilities, in the 105th Congress, the Special Committee conducted hearings covering international banking, health care, telecommunications, transportation, pensions, emergency planning, small businesses, water, and more—it was these ten initial hearings conducted in 1998 that wound up informing the Committee's first report. And these ten hearings provided Bennett and his colleagues with a solid sense of the status of the seven problematic areas which Bennett had initially highlighted as areas of concern. Featuring numerous witnesses representing a variety of businesses/agencies as well as some of the competing interests of those sectors, meant that the meaning of the particular hearings could be troublesome to precisely parse. One witness might provide a substantially rosier view than another, one witness might apologetically note that their agency/company had been slow to get started but was now speeding ahead, questions could be raised about just how trustworthy self-reported data really was, and though Y2K provided the common denominator across hearings it could still be unwise to completely flatten out the differences between the groups being focused on at different hearings. And though Bennett's opening remarks and concluding comments at each hearing provided something of a summary, reading over the hearings could easily leave readers confused as to what exactly the key takeaways were. Luckily, the Special Committee's

[757] Ibid, 238.
[758] Ibid, 240.

report *Investigating the Impact of the Year 2000 Problem* sought to summarize the committee's findings in a clear and concise matter.

Investigating the Impact of the Year 2000 Problem began with a statement of caution. Couching its conclusions in the "10 hearings" the committee had held as well as the "difficult questions" asked by the committee and the reports it had requested "on a breathtaking range of affected industries," the report nevertheless opened with an acknowledgment that the committee "cannot predict what will occur on January 1, 2000. The data simply does not exist."[759] And this admission of uncertainty came after the committee touted itself as "among the most broad-based, best-informed bodies in existence" regarding the Y2K problem.[760] Issued on February 24, 1999—with ten months remaining—the report represented "the Committee's best evaluation of the current Y2K environment."[761] Engaging in self-reflection, the Committee stated "We have made a difference," crediting itself for helping elevate Y2K in the public eye, while bringing Congressional pressure to bear on government agencies and segments of the business sector.[762] The report was clearly not the committee's final report, and though the report summarized the committee's work from the 105th Congress, the report made clear that this work would continue in the 106th Congress, where the committee's attention would focus more heavily on international readiness.[763]

Where Bennett had once outlined his seven priorities for the special committee, the initial report clearly showed the influence of that focus as the sectors it provided information on were:

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[759] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Investigating the Impact of the Year 2000 Problem*. ii.
[760] Ibid.
[761] Ibid.
[762] Ibid.
[763] Ibid.

utilities (electric, water, oil and gas), healthcare, telecommunications, transportation, financial services, general government (emergency preparedness, federal agencies, department of defense, state and local government), general business (small business to global corporations, pharmaceuticals, food industry, chemical manufacturing), litigation, and international preparedness. This clearly represented a wide range of sectors, featuring highly disparate levels of reliance on computerized systems (and highly variable computerized systems on which they were reliant), nevertheless the breadth of sectors under consideration made clear just how widely dispersed Y2K related problems were. Nevertheless, before delving into sector specific assessments the report provided general observations that established a less than encouraging tone. In the estimation of the committee: many sectors "critical to Americans' safety and well-being" were not "fully engaged in finding a solution," numerous affected sectors had "started Y2K remediation too late," Y2K disclosures remained insufficient and untrustworthy given how often these disclosures relied on self-reporting, fear of litigation was keeping many sectors from openly reporting their remediation status, emergency and security planning for "Y2K-related systems failures" was only just beginning, and leadership was still lacking.[764] Recognizing that the Internet had become a hotbed of rumors, warnings of doomsday, and conspiracy theories, the Committee noted "The good news is that the talk of the death of civilization, to borrow from Mark Twain, has been greatly exaggerated."[765] While "the bad news" was that the Committee "has concluded that the Y2K problem is very real and that Y2K risk management efforts must be increased to avert serious disruptions."[766] The committee made clear that its findings were not

[764] Ibid, 1-3.
[765] Ibid, 1.
[766] Ibid.

the result of a frightened child crying wolf, but the work of committed public servants riding across the land shouting "Y2K is coming! Y2K is coming!"

While the committee was able to offer certain overarching observations, the sector assessments demonstrated a more detailed and nuanced engagement with the specifics. In assessing utilities, the committee acknowledged that few questions were asked more about Y2K than "will the lights stay on?" to which the report offered the carefully qualified answer of "In general, the answer is yes."[767] Highly automated and highly interconnected, this complexity is what allowed the grid to function so reliably, and yet this also put the grid at risk of Y2K related disruptions.[768] Despite having gotten off to a slow start, the committee recognized that the utilities industry had shown clear progress over the course of 1998, though the question for the committee was whether time enough remained.[769] Sloth was the sin of the utility sector, nuclear facilities were accused of "lagging behind,"[770] the gas and oil sector "began too late and is progressing too slowly,"[771] and water utilities also needed electricity to function meaning they too were at mercy of the slow pace of the other utility sectors.[772] Despite finding some of the utility sector's self-assessments to be overly optimistic, considering that the utilities sector was accustomed to dealing with various disruptions, the committee remained cautiously confident: even if "failure of some parts of the electric industry's system is likely…the Committee does not expect the integrity of the overall power grid to be compromised."[773]

[767] Ibid, 17.
[768] Ibid, 18.
[769] Ibid, 23.
[770] Ibid, 25.
[771] Ibid, 32.
[772] Ibid, 33.
[773] Ibid, 3.

Compared to the Healthcare industry, the Utilities were in phenomenal shape. Though Healthcare represented "the largest single industry in the United States," due to its reliance on software, embedded microprocessors, and electronic interconnections or interfaces the sector was particularly at risk.[774] In the committee's view, hospitals (particularly rural and inner-city hospitals) were seriously lagging behind, a matter of particular concern given how many different types of devices produced by a range of manufacturers needed to be checked for Y2K compliance. Healthcare represented a space wherein the "domino effect of Y2K failure" was particularly acute for "if one biomedical device malfunctions, it can potentially shut down an operating room" or send out incorrect patient information that could flow throughout the interconnected systems.[775] Work was clearly being undertaken within the healthcare sector, but here too the question was whether enough was being done in the time remaining.

Of the sectors assessed, telecommunications appeared to be in better shape than many of the others. The risks to telecommunications were certainly present; however, at the start of 1999 the National Reliability and Interoperability Council had reported that the telecommunications industry "was meeting the Y2K challenge" with much of the industry on track to meet its "self-imposed goal of Y2K readiness by June 1999."[776] And the FCC seemed to share in this positive assessment of the work being done—even as smaller/local exchanges lagged behind the larger companies.[777] Transportation was framed as another sector the proper functioning of which was essential for the American economy, and here too the progress that was being made was seen as insufficient. Airlines were a particular area of worry for the committee, and had been a sector

[774] Ibid, 43-44.
[775] Ibid, 47.
[776] Ibid, 58.
[777] Ibid, 58-59.

that had been highlighted in hearings as one that would not be ready by the deadline.[778] Airports and airlines were accused of starting too late, the FAA still had "a long way to go," maritime shipping had been insufficiently aggressive such that "disruptions to global trade are highly likely," and public transit systems were not considering seriously enough their Y2K exposures.[779]

Prior to the formation of the Special Committee, Bennett had held Y2K hearings focused on Y2K's threat to the financial sector, and as the Special Committee's report noted the financial services sector "has been the subject of more oversight than any other industry."[780] And though the financial sector, like all of the other sectors, still had a fair amount of work to do, "early attention to the problem and significant regulatory and Congressional oversight" made it so that the financial sector ranked "ahead of virtually all other industries" in terms of its Y2K readiness.[781] This praise needs to be placed in the full context of the report wherein ranking "ahead" is not so much enthusiastic praise of the financial sector as it is criticism of other sectors. Furthermore, the financial services sector was an example of a sector whose own decent readiness was built upon the weak foundation of reliance on many less prepared sectors (and countries). What's more banks occupied a challenging position insofar as public loss of faith in their efforts could in turn spark other sorts of behavior (such as bank runs), that could precipitate a financial crisis.

Having cast an unflinchingly critical gaze towards numerous sectors, the report also considered the preparedness of the US government in its various forms as well. Here, too, the

[778] Ibid, 71.
[779] Ibid, 75.
[780] Ibid, 79.
[781] Ibid, 79.

picture was not encouraging, as many of the emergency preparedness aspects of government that would be called upon in the case of a Y2K worst-case-scenario were themselves not ready for Y2K. The level of government preparedness varied widely across the states, and could even vary within states depending on which city or county was being considered—and the Special Committee's assessments of the preparedness of "state and local governments" were "not optimistic."[782] As the report cards being issued by Representative Horn continually documented, "federal agencies have been slow out of the gate in the race to cross the finish line for Y2K efforts."[783] And to make matters worse, Y2K preparedness efforts by the government were becoming the subject of "numerous misguided rumors and outright falsehoods…being circulated in some quarters of the Internet" that suggested the government was planning on using Y2K as an excuse to introduce martial law.[784] The Special Committee clearly argued that many sectors had quite a lot of work to do in the little time that remained, and the government ranked high amongst those sectors with tremendous work ahead of it.

Given the pervasiveness of computer technology, the Y2K challenge presented a challenge not only to the various sectors singled out for particular attention, but to general business as well. Though here the problem became much harder to keep track of, especially as it came to numerous small businesses that might not understand their own Y2K exposure or have the funds necessary to engage in the expensive work of remediation—and the Special Committee had heard from witnesses who testified that Y2K had the potential to close or significantly harm

[782] Ibid, 114.
[783] Ibid, 106. Horn's report cards are specifically mentioned in the report on page 110, by the time of the special committee's report, Horn had issued the first six of his report cards (covering 1996 through 1998).
[784] Ibid, 99.

hundreds of thousands of small businesses.[785] And included in with these "general" businesses were the likes of grocery stores whose ordering systems, just in time delivery systems, credit card processing systems, and computer monitored expiration dates—all meant that Y2K could hit the US where it ate.[786] Reaching these sectors and convincing them to take the matter seriously was another reason why publicizing the crisis and making its risk understood was vital. And though the report did not paint an overly rosy picture of the US, it also noted "the U.S. is purportedly the leader in Y2K remediation…other countries are dangerously behind."[787] While the World Bank and the United Nations were engaging in international outreach the report seemed to suggest that had each country prepared its own report on investigating the impact of the year 2000 problem within their own borders, the US would appear highly prepared by comparison.[788]

The report was not exactly a reassuring document. Certainly, it repeatedly drew attention to the progress that was being made and to the time which remained in which to make further progress, but the overall tone of the report was not of high confidence. And though it could be necessary to parse through the minutiae of numerous hearings to reach conclusions, the report put its worried conclusions right up front in its executive summary. Though the Committee assured its readers that they had "no data to suggest that the United States will experience nation-wide social or economic collapse" that comment was followed up by the word "but" which in turn was followed up by the less than comforting note that "the Committee believes that some disruptions will occur" that some of those "may be significant" and that the international results

[785] Ibid, 128.
[786] Ibid, 128-129.
[787] Ibid, 128.
[788] Ibid, 139.

might "be even more tumultuous."[789] To the everyday American, the Committee noted "The Y2K problem has been likened to a winter storm, with the implication that similar preparation is appropriate," and though the report definitely did not recommend buying guns, gold, and fleeing to the hinterlands, consumers were "urged to keep copies of financial statements," and though the evocation of "a winter storm" does not suggest stocking up for the end of days, it does suggest preparing to be stuck at home in the cold and dark for a couple of days.[790] The report's executive summary concluded by stating that "Americans should prepare for Y2K based on facts and reasonable predictions about the problem's effects on vital services," and in terms of a source for such "facts and reasonable predictions" it seemed that the report was framing itself (and the Special Committee) as exactly the sort of trustworthy account towards which they could look for making such difficult assessments.[791]

Beneath the fairly unexciting headline "Congress Hears Status of Year 2000 Solutions," Eric Schmitt of the *New York Times* captured the report's mixture of hopefulness and wariness by noting that even as the US government and key sectors of the US economy "are generally winning the race to fix year 2000 computer glitches" the chance of "widespread civil unrest and economic disruption abroad" could not be ignored.[792] And though Schmitt opened his article by reference to "winning the race" the qualifier of "generally" pointed to the way the "160-page report" had noted that the health care industry, small businesses, as well as many local and state governments were making insufficient progress.[793] Referring to the Special Committee's report as "the most comprehensive assessment of the year 2000 problem," Schmitt drew particular

[789] Ibid, 6.
[790] Ibid.
[791] Ibid.
[792] Eric Schmitt. "Congress Hears Status of Year 2000 Solutions." *The New York Times*. March 3, 1999. A13.
[793] Ibid.

attention to what the report had said about hospitals and the International situation—highlighting efforts by the Clinton administration and the Pentagon to work with other nations, while echoing the analogy that Y2K was most likely to be like "a bad snowstorm that disrupts daily life for a few days at most."[794] Robert Rankin of *The Philadelphia Inquirer* provided a gloomier assessment of "the sober study" issued by the Special Committee, noting "the authors of the carefully low-key report take care to avoid either undue alarm or unfounded optimism."[795] Summarizing the findings of the report, Rankin presented it as concluding that despite the hard work that was occurring due to remediation efforts that "began late and remain insufficient…some incalculable level of economic disruption is inevitable."[796] The report was treated as something of a tool that would be used by members of the Special Committee "in an effort to rouse awareness" even as the study "aims to fill a gap in public knowledge left by what it terms inadequate news-media discussion to date."[797] Yet as reporting by the likes of Schmitt and Rankin demonstrated, media outlets (including those trying to report responsibly) were not entirely sure what to make of the report's blend of reassurances and warnings. The report aimed to provide authoritative information, but the report was littered with caveats, qualifiers, and a sense that what mattered was what happened in the time remaining.

If prominent media outlets like *The New York Times* and *The Philadelphia Inquirer* were echoing the special committee's careful mix of hope and wariness, the report was read slightly differently by many who were already alarmed by Y2K. Laura Harrison McBride's *The Unofficial Guide to Surviving Y2K and Beyond*, provided a fairly evenhanded summary of the

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[794] Ibid.
[795] Robert Rankin. "Senate Panel is Troubled by Gaps in Y2K Progress: a Gloomy Report on the Computer Glitch Finds Health Care, Utilities and Government Particularly Worrisome." February 24, 1999. C01.
[796] Ibid.
[797] Ibid.

core findings of the report even while raising the question of whether or not the governments remediation claims were actually believable.[798] While *The Unofficial Guide* recognized that the questions it raised about the actual level of remediation could be labeled by some as "paranoid…such implicit accusations were fueled by the federal government itself."[799] Summarizing the personal preparedness steps from the report, *The Unofficial Guide* drew attention to the report's plea to make choices based on facts and reasonable predictions, but as the *Guide* drolly explained the report was not enough in and of itself to provide that kind of information, hence the need for book's like *The Unofficial Guide.*[800] Going beyond summarizing the report, *Just In Case: Dispatches from the Front Lines of the Y2K Crisis*—a book that brought together a range of prominent perspectives on Y2K (including a reprint of a piece by Senator Bennett)—published the Special Committee's executive summary as an appendix, and reprinted the entirety of the report section on the status of the healthcare sector.[801] While *Just In Case* featured the "informed opinions" of numerous Y2K related individuals, the report was included as it provided readers not with opinion but with "definitive information."[802]

Meanwhile Gary North, a leading voice amongst the Y2K alarmed, went further than merely summarizing or republishing sections of the report—instead he republished the report in its entirety, albeit with a foreword by himself, and with a statement on the cover reading "what the government knows but the media aren't telling you."[803] In assessing the Senate's report,

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[798] Laura Harrison McBride. *The Unofficial Guide to Surviving Y2K.* (New York: Macmillan General Reference, 1999). 37-44.
[799] Ibid, 45.
[800] Ibid, 59.
[801] Michael Brownlee, Barbara Stahura, and Robert Yehling. *Just In Case: Dispatches from the Front Lines of the Y2K Crisis*. (Novato: Origin Press, 1999). 182-201.
[802] Ibid., xiii.
[803] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *The Senate Special Report on Y2k: Investigating the Impact of the Year 2000 Problem.* (Nashville: Thomas Nelson Publishers, 1999). xvi. This

North did not dispute its framing of Y2K as a crisis that flowed from societal reliance on computing technologies, rather what he questioned was the report's calming tone. As North put it, "[t]he report is really, truly frightening. Strip out all of the qualifying language…and you have a series of problems listed for which there are no proven answers."[804] To further cast doubt on the report's rosy view, North urged readers of the report to be skeptical of the good news as much of the information the report was based on came from industry and governmental agencies self-reporting.[805] The Special Committee warned there would likely be some disruptions, but North asked "[i]n the summer of 2000, what will remain of the worldwide social order that relied on computers?"[806]

The Special Committee's report was clearly something of a Y2K Rorschach test—and though the committee had taken pains to not wind up lumping themselves in with the prophets of doom, the failure of the report to clearly and simply state that there was absolutely no cause for worry whatsoever provided plenty of cracks in which uncertainty could grow. Furthermore, the level of concern present in the report provided those who were arguing that not enough was being done with a sober government document to cite. It was somewhat harder to frame any serious level of concern about Y2K as being an overreaction when the Senate's Special Committee was warning that there were likely to be disruptions. And some figures like North were quick to tap into distrust and paranoia by suggesting that if the report was willing to make the situation seem so dire, the reality almost certainly had to be much worse. Yet the press release that was issued with the report maintained the Paul Revere not Chicken Little stance that

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book is a republication of the Senate's report. It reprints the report accurately and in its totality, but what makes this printed book noteworthy is the foreword it includes by Gary North.

[804] Ibid, xiii.

[805] Ibid, xxi.

[806] Ibid, x.

Bennett was aiming for, with Bennett stating "We're farther ahead than where we were a year ago, but behind where we should be."[807] Singling out the healthcare industry and the rest of the world as sources of concern, the press release ended with Bennett stating "the key is to prepare now to avoid catastrophe in the new millennium."[808] Though these dire words were couched in comments that made it clear that the Special Committee was still hard at work.

Though the Special Committee's initial report drew on hearings that took place during the 105th Congress, the report was actually issued during the 106th Congress, and even as the report was being finalized and issued the Special Committee was continuing its work. In 1998 the Special Committee had held ten hearings, while in 1999 the Special Committee conducted twenty-five hearings, including a final hearing less than a month before the rollover date. Whereas the Special Committee's activities in 1998 were highly related to the seven areas Bennett had initially highlighted, in 1999 the Committee maintained its attention while placing extra attention on the various problematic areas that had been highlighted as areas of concern in the report. In 1999 the Special Committee held hearings on the food industry, international readiness, litigation, the readiness of the chemical industry, healthcare, community preparedness, and there was even a hearing devoted to whether or not McDonalds would be ready. Frequently the titles of the hearings were presented as questions: "911 and Y2K: Will the Call be Answered?" or "Education and Y2K: Will Our Schools Make the Grade?" While Betteridge's law of headlines states that headlines that end in question marks can be answered with "no," this law does not seem to be applicable to Congressional hearings. Alas, this does not mean that the

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[807] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. "Press Release: Bennett Report Says Health Care, International Community at High Risk for Y2K Failures." (http://www.senate.gov/~y2k/news/pr990302.htm: March 2, 1999); archived at *Wayback Machine* (http://web.archive.org/web/20000816183738/http://www.senate.gov/~y2k/news/pr990302.htm).
[808] Ibid.

opposite is true either and that any hearing title that ends with a question mark can end with a "yes." Indeed, as the actual testimony at these hearings, and the questions by members of the Special Committee made clear, the answer was almost always "we still aren't sure." After all, the point of the hearings was to respond to the uncertainty that remained, even if by each hearing's end a definitive conclusive answer was rarely, if ever, given.

On the very day that the Special Committee's report was issued, Bennett and Dodd wrote to Attorney General Janet Reno asking her to provide the committee with a report on the "potential legal liability of the federal government.[809] And only the day before, Bennett had written to the World Bank's Director of Energy, Mining, and Telecommunications requesting information from the World Bank's own study into international Y2K preparedness (including the differences in readiness between "developed" and "developing" countries).[810] Just in case he had not seen it, Bennett and Dodd sent Vice President Al Gore a copy of the committee report alongside a letter warning that Y2K had "the potential to yield catastrophic consequences," and pleading with Gore to use his upcoming meeting with Russian Prime Minister Yevgeny Primakov to discuss US-Russian collaboration regarding matters of nuclear safety.[811] And when Sergei Stepashin was appointed Prime Minister of Russia, Bennett and Dodd wrote him a congratulatory letter that encouraged him to treat Y2K as an issue—and to consider seriously working with the US on addressing it.[812] On March 16, 1999 the committee sent letters to all federal departments and agencies commending them for the work they had done thus far, while recognizing that "renovated systems may still fail" and that "unexpected failures" could still

[809] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Investigating the Impact of the Year 2000 Problem: The 100 Day Report.* 246-247.
[810] Ibid, 245.
[811] Ibid, 250.
[812] Ibid, 261-262.

occur and thus requesting detailed information on "continuity of operations and contingency planning" (this information was to be given to the committee by April 30, 1999).[813] Continuing to raise public awareness and continuing to exert pressure on other officials, Bennett and Dodd wrote to Koskinen to encourage him to increase the federal government's pressure on the still lagging chemical sector.[814] And just as Bennett and Dodd had written to Gore seeking increased executive focus on Russia, Dodd maintained that focus in writing to President Clinton and telling him that "stabilizing Russia's Y2K problems will help reduce the risk of a significant number of potential catastrophes."[815] As 1999 entered its final stretch, Bennett noted that the Special Committee's "goal and mission" had been "to sound the alarm bell, and encourage effort and action towards the remediation of critical systems wherever they are."[816] Though as Bennett pushed for contingency plans the question remained as to how successful the Special Committee had been in achieving its goal.

Returning to the National Press Club on September 8, 1999, Senator Bennett provided some introspective analysis of what the Special Committee had achieved since his previous address to that audience. Touting the report the committee had produced, Bennett noted "I've been told it's one of the most widely read documents around the world, mainly by governments that were upset by the things we said about them."[817] And though this comment was followed by laughter, Bennett noted that the outpouring of statements from foreign governments only

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[813] Ibid, 251-252. The letter reproduced on those pages is the version of the letter sent to the Department of Commerce; however, as is noted in a letter to Jacob Lew (Director of the Office of Management and Budget) on 266, those letters were sent to all federal agencies.
[814] Ibid, 273.
[815] Ibid, 275.
[816] Ibid, 276.
[817] Robert Bennett. "Address by Senator Robert Bennettt (R-UT)." National Press Club. September 8, 1999. (http://www.senate.gov/~y2k/speeches/bennett990908.htm); archived at *Wayback Machine* (http://web.archive.org/web/20000823154522/http://www.senate.gov/~y2k/speeches/bennett990908.htm).

convinced the committee that those foreign governments "were in worse shape than they were claiming…the report if anything was too mild."[818] With only 17 weeks to go, Bennett noted that more had been accomplished than he would have thought at the time of his previous address to the National Press Club. While the amount of self-reported data meant that overly optimistic assessments should still be questioned, the amount of information the Committee now had available to them made it clear that "the awareness has paid off."[819] To the extent that it still seemed inevitable that there would be some glitches, Bennett was confident that most of the sorts of problems that might occur in the US "can be solved within 72 hours."[820] Bennett's concerns now involved something of a pivot, as the main worry was no longer specifically that Y2K would cause a catastrophe, but that some might try to exploit Y2K to create a catastrophe, as there was a chance that some might "use the dependence we have on computers as an opportunity to attack us."[821] Hackers, terrorists, and hostile nation-states were named as potential threats, and yet in elevating these groups as sources of danger it is noteworthy that Y2K itself was no longer framed as the significant threat. Though it was too early to reach definite takeaways, Bennett seemed to already be drawing out the conclusion that "the thing we have learned out of Y2K is that in addition to the tremendous productivity that we get out of computers there is a vulnerability that will be with us."[822]

With the year 2000 only a hundred days away, the Special Committee produced its second report, which would be its last report before the arrival of the year 2000. From the outset, the *100 Day Report* struck a less dire tone than the previous report, after all "[r]emarkable

[818] Ibid.
[819] Ibid.
[820] Ibid.
[821] Ibid.
[822] Ibid.

progress" had been made since the Committee had issued its first report.[823] Though this did not mean that the Special Committee was sounding the all clear, for the Committee still had "lingering concerns" about the readiness of healthcare, small businesses, local government, and international readiness.[824] The report did not offer a definitive statement of what would happen, indeed it went so far as to acknowledge that such a prediction remained "ultimately unknowable," but the report was framed as an attempt to provide a thorough assessment of the "size, scope, and nature of the problems that may occur."[825] Even with only one hundred days remaining the report found the Committee still walking the line between Paul Revere and Chicken Little, pointing out that "sensationalists" were still making Y2K out to be the end of the world even as "some corporations and nations concerned about their image" continued to shrug off Y2K's seriousness.[826] In contrast, the Special Committee warned, "the true extent of Y2K failures will match neither the most optimistic nor the most apocalyptic predictions," and ultimately Y2K would "cause more inconveniences than tragedies."[827] Though the Special Committee seemed fairly proud of the work it had accomplished, and was largely laudatory of the work of the Clinton administration, with so little time remaining the responsibility fell to individuals and companies to ensure they were prepared.

In the early days of the Special Committee, Bennett had highlighted sectors that were not merely at risk, but upon which the rest of society was heavily reliant. Luckily, as the *100 Day Report* noted, "significant progress" had been made in the "sectors critical to the safety and well-being of Americans"—smaller firms, many hospitals, local governments, and many educational

[823] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Investigating the Impact of the Year 2000 Problem: The 100 Day Report*. ii.
[824] Ibid.
[825] Ibid, 1.
[826] Ibid.
[827] Ibid.

institutions could be in better shape, but at least the power should stay on.[828] The Committee continued to couch some of its more positive comments in careful qualifiers, recognizing: that many Y2K readiness deadlines left little margin for error, that self-reported Y2K readiness remained not fully trustworthy, that there still was not sufficient Y2K disclosure, that other countries were still lagging behind the US, and pivoting slightly the committee looked beyond Y2K to acknowledge that the crisis revealed a new world of cyber vulnerabilities.[829]

Whereas its initial report highlighted the need for many sectors to increase their efforts, the *100 Day Report* was largely pleased with the efforts that had been made, with the financial service sector, utilities, and telecommunications receiving particular credit. While maintaining that there was uncertainty, the Committee was now less engaged in explaining what various sectors said they were going to do, and instead provided explanations as to what had been done in those various sectors. Generally speaking, the sectors that had devoted significant attention and resources to Y2K were seen as being well prepared, while those that had been slow to act were now at greater risk. The Committee was also mindful of the differences within single sectors, cognizant of the hazards of flattening out significant differences, after all (in the case of healthcare) pharmaceutical manufacturers and large hospitals were in fairly good shape, though less well-resourced hospitals and private practices were a source of consternation for the Committee.[830] A similar wide-range of readiness could be seen regarding the readiness of local governments, as some counties were quite prepared while others still had work to do.[831]

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[828] Ibid, 2.
[829] Ibid, 2-3.
[830] Ibid, 35-42.
[831] Ibid, 81-120.

As the catastrophic concerns about Y2K diminished, the worries of a tsunami of litigation also subsided, a definite relief given the frequency with which legal cost had been treated as almost a secondary crisis atop Y2K itself—true, there had already been seventy-fourY2K lawsuits, but that number paled in comparison to the number of lawsuits that had been feared.[832] International Y2K preparedness was noted as what had "Been the most challenging aspect" of the Committee's work in 1999, as it had struggled to get an accurate picture of just how ready other nations were.[833] In many ways, in looking at readiness reports from other governments, the Committee was showing a level of skepticism that many in the Y2K alarmed community in the US had shown towards the Special Committee's own reporting. While there remained "an uneven global understanding of Y2K vulnerabilities,"[834] not all countries had the same degree of Y2K exposure, and a range of organizations such as the International Y2K Cooperation Center (which was backed by the UN and funded by the World Bank) had been working to share information.[835] While the Committee had come around to the idea that the US would be able to weather the winter storm of Y2K, it remained "greatly concerned about the international Y2K picture," noting that international disruptions were likely and that these could have ripple effects that would eventually reach the US.[836] From the international back to the local, the Committee was mindful of the level of concern amongst everyday Americans, and encouraged them to keep themselves informed.[837] Though it was not a terrible idea to have some extra emergency supplies on hand (just in case), this was framed as simply a good idea in being prepared "for any

[832] Ibid, 158.
[833] Ibid, 161.
[834] Ibid.
[835] Ibid, 164-165.
[836] Ibid, 184.
[837] Ibid, 189.

emergency that might arise."[838] The key thing was not to panic, as panic could cause things like bank runs or empty supermarket shelves which in turn could create further problems.[839] Responsible citizens needed to educate themselves, and once more the Committee's report provided a rich informational resource for just that purpose.

In a press release accompanying the report, Bennett kept up his Paul Revere routine. Pushing Chicken Little to the side, Bennett stated "we are more confident than ever that a nationwide catastrophe will not occur," though he hastened to add "we cannot help but be wary of the view by some that this will be a problem for other people."[840] The situation was not looking terrible, but it still had "the potential to affect you in your town, on your street."[841] The press release echoed the report's sector specific concerns, but it directed its darkest assessments away from the US and towards the international situation.[842] While the Committee's report was hesitant to put it so boldly, *The New York Times* offered a reassuring headline "Panel on 2000 Finds News Largely Good."[843] The article placed the *100 Day Report* alongside a variety of other, non-governmental Y2K reports that had been issued around the same time, to note that the overall tone was shifting towards "optimistic expectations."[844] Though the *Times* suggested that the Committee's report "contained no major surprises for computer experts and others involved in Year 2000 activities" the report was still an opportunity to convey that information to those

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[838] Ibid, 189.
[839] Ibid, 190.
[840] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. "Press Release: Bennett's 100 Day Report: Small Businesses, Communities, and Some States Vulnerable to Y2K Disruptions." (http://www.senate.gov/~y2k/news/pr990922.htm: September 22, 1999); archived at *Wayback Machine* (http://web.archive.org/web/20000816183356/http://www.senate.gov/~y2k/news/pr990922.htm).
[841] Ibid.
[842] Ibid.
[843] Barnaby Feder. "Panel on 2000 Finds News Largely Good." *The New York Times*. September 22, 1999. A22.
[844] Ibid.

who were not computer experts or highly involved in and around Y2K.[845] Speaking of the report, Bennett was quoted as saying "We are in much better shape than I would have anticipated a year and a half ago" though he added that the report still showed "plenty of indication that there is still much work to be done."[846]

Indeed, much work remained, but to a large extent the Special Committee had done what it could. As its *100 Day Report* had made clear, with so little time remaining the responsibility rested with individual people, the particular sectors, and with various countries. The Special Committee had drawn attention to Y2K, had called figures from a range of sectors to account for whether or not they were ready, and had published two reports dense with details that sought to convey a trustworthy assessment of what to expect. Though the publication of the *100 Day Report* did not mark the end of the Special Committee's hearings, the handful of hearings conducted in September and October of 1999 were conducted under the shadow of the *100 Day Report's* conclusions. In some cases the hearings now featured a shift towards final reassurances, such as the October 7, 1999 hearing on emergency preparedness at which Bennett noted that the responsible agencies had conducted numerous "planning exercises" so that they now had "appropriate response mechanisms" just in case "any serious problems related to Y2K occur."[847] And a couple of weeks later, with just 67 days remaining, Bennett delivered his last opening remarks at a hearing for the Special Committee.[848] Framing the committee as "one of the best-informed bodies on this topic anywhere," Bennett was still acknowledging that it was not clear exactly what would happen, and thus "this uncertainty makes preparation, including contingency

[845] Ibid.
[846] Ibid.
[847] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Virtual Hearing on Emergency Preparedness.* 106th Cong., 1st., October 7, 1999.
[848] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Y2K's Impact on the Economy.* 106th Cong., 1st sess., October 25, 1999.

plans, prudent both for businesses and individuals."[849] While evoking the "rugged individualism that built America," Bennett commented on the ways that Y2K demonstrated just how highly complex and interrelated the nation, and the world, economy had become. And Bennett closed his opening statement by saying, "We have done everything we can as a Committee to minimize the impact of Y2K, and will continue to do so for the next nine weeks. Then, like the rest of the world, we will see what happens."[850]

In accordance with its charter, the Special Committee disbanded on February 29, 2000; however, before officially disbanding the committee offered a final report, fittingly titled "Y2K Aftermath—Crisis Averted."[851] Despite the relative smoothness with which the year 2000 had started, the Committee remained steadfast in defense of the work it had done and in defense of the overall work that had gone into preparing for Y2K, as they put it "the level of effort was justified and the expenditures of the public and private sectors were indeed necessary."[852] In contrast to the reports that were acting as though nothing had happened, the Committee noted that "hundreds of computer problems have been reported" though "most have been quickly corrected and none have caused serious disruptions."[853] What's more, as the report noted in a thirteen page appendix listing many of the glitches, "the full extent of Y2K problems will probably never be known" as not all incidents were being publicly reported and as "there is no incentive for corporations or countries of the world to openly report computer problems."[854] While inconveniences instead of tragedies had been what the committee had been expecting for

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[849] Ibid.
[850] Ibid.
[851] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Y2K Aftermath—Crisis Averted. Final Committee Report*. February 29, 2000.
[852] Ibid, 10.
[853] Ibid, 3.
[854] Ibid, 37-49. The quoted passage appears on page 37.

the US, the lack of major international failures seemed curious. Yet, the committee noted that the countries that delayed their remediation efforts were able to benefit from lessons learned in other countries that allowed them "to make Y2K repairs more quickly and efficiently," while the influence of global corporations to bring their international branches in line had been underestimated, even as many countries bought themselves more time by switching to manual control in some cases.[855] Furthermore, as the committee further explained as "the U.S. is far more computerized" with systems that are "more interconnected and complex than in most other countries," therefore it made sense that Y2K had been a particularly costly threat to the US.[856]

To reach a point where the report could be titled "Crisis Averted," the Committee acknowledged that this had occurred thanks to the "tremendous efforts of the public and private sectors."[857] Yet even if the members of the Special Committee were not the people who were literally sitting down to check, correct, or test computer systems, in its final report the Special Committee gave themselves credit for their role. The Committee had conducted 35 hearings on Y2K, had written hundreds of letters to figures in various sectors to gather information, and had been responsible for issuing the report that "was the federal government's first comprehensive analysis" of Y2K (and they had followed that up with their second report).[858] The Committee's hearings had effectively maintained pressure on public and private sector entities, while simultaneously keeping the public informed and reassuring them that Y2K remediation was being handled seriously. Beyond preventing what could have been a computer wrought calamity, the Committee highlighted other tertiary benefits of Y2K, noting that it had "heightened

[855] Ibid, 10-11.
[856] Ibid, 12.
[857] Ibid, 13.
[858] Ibid, 13-15.

awareness about the importance of high-tech infrastructure protection," even as it had given many sectors and companies an excuse to modernize their high-tech systems.[859]

The day the Special Committee was dissolved, Senate Resolution 264 was introduced and agreed to—it was a resolution that congratulated and thanked Bennett and Dodd for their "fine work." In the words of the resolution it was because of Bennett and Dodd's "initiative" that "the Nation and the world began to take the Y2K problem seriously and worked to resolve the problem."[860] As the resolution put it "due to Chairman Bennett's and Vice Chairman Dodd's tremendous leadership, dedication, and the work of Special Committee on the Year 2000 Technology Problem, the first potential catastrophe of the new century was avoided."[861]

Chicken Little had been wrong, the sky did not fall. However, Y2K still arrived, and when it did it discovered that the world was ready for it. Thanks in no small part to the Paul Reveres who had ridden through the land shouting "Y2K is coming!"

Conclusion

In sounding the initial alarm, Senator Moynihan expressed the belief that though the computer had been "a blessing," Y2K had the potential to turn it into "the curse of the age."[862] And as members of Congress wrestled with Y2K, beyond blessings and curses, one of the things that Y2K made clear was "the age" in which the United States, and the world, now found

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[859] Ibid, 23.
[860] U.S. Congress. Senate. *Congratulating and thanking Chairman Robert F. Bennett and Vice Chairman Christopher J. Dodd for their tremendous leadership, poise, and dedication in leading the special committee to the year 2000 technology problem and commending the members of the Committee for their fine work*. S. RES. 264. 106th Cong., 2nd sess., February 29, 2000. 3. (https://www.congress.gov/bill/106th-congress/senate-resolution/264)
[861] Ibid, 3.
[862] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Investigating the Impact of the Year 2000 Problem: The 100 Day Report.* 212.

themselves. It was not that Y2K was the trumpeted arrival of the "Computer Age" or the "Information Age," rather it was that Y2K made it clear that this was the age in which societies had been operating for quite some time—even if it took the threat of Y2K to make that clear. As the numerous reports, report cards, public statements, and hearings made clear—it was not simply that computers had become increasingly common devices in homes, businesses, and offices, but that computers had now become so tightly bound up with essential infrastructure and essential economic activities that, as Representative Jim Turner (D-TX) observed, at the House's final Y2K hearing, "every facet of our life now depends upon our computers working well."[863]

Thus, as the Senate Special Committee put it, Y2K represented not only a serious challenge to be solved, but also "an opportunity to educate ourselves first-hand about the nature of 21st century threats."[864] Deploying slightly more muted language than Moynihan's evocations of blessings and curses, the Special Committee's report had instead spoken of "advantages" and "vulnerabilities."[865] And yet the Special Committee was also quite cognizant of the fact that computers and the reliance on them were not going anywhere, as "reverting to a world without microchips or technology-dependent systems is not only undesirable, but also impossible."[866] There were certainly some in and around Y2K who might have countered that it would actually be desirable to revert to such a world (or at least transition back to a point that was not quite so dependent), but the ironic word in that sentence from the Special Committee was "impossible." For as the Special Committee's hearings, as well as Congressman Horn's report cards, made

[863] U.S. Congress. House. Joint Hearing before the Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and the Subcommittee on Technology of the Committee on Science. *Year 2000 Computer Problem: Did the World Overreact, and What Did We Learn?* 8.
[864] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Investigating the Impact of the Year 2000 Problem.* 13.
[865] Ibid.
[866] Ibid.

clear it was not wholly impossible to imagine that heavy reliance on computers had created the conditions wherein "reverting" would happen precisely as a result of the computers shutting themselves down. That "reverting" was "undesirable" and "impossible" was not meant in a fatalistic sense. Rather, the Committee's report noted "we, as a nation and as individuals, need to consider carefully our reliance on information technology and the consequences of interconnectivity, and work to protect that which we have so long taken for granted."[867] And Y2K was the crisis that meant these things could no longer be taken for granted.

Y2K is the story of an economic problem that became a technological problem which in turn became a social problem, and the role played by Congress in this story demonstrates the ways in which it became a social problem and the work that was required to address Y2K once it had become a social problem. Though members of Congress were heavily invested in learning about the technical aspects of the problem, and reporting on the state of remediation of those problems, beyond calling attention (and directing various kinds of resources) to the technological problem, Congressional efforts related to Y2K were connected to the social side of the problem. Congress members were not primarily addressing the actual IT professionals doing the work, nor were they even primarily speaking to managers, department heads, or CEOs—Congress was speaking to the public about what was being done. Here Congress was routinely reacting to the way that Y2K was being framed for the public by sensationalist media accounts, trying to counter the narratives of doom and gloom by providing the public with the reputable testimony of experts—the very act of which helped to demonstrate to an anxious public that those in positions of authority were not dozing at their keyboards. If the work of addressing the technological problem rested primarily with those with responsibility and powers related to

[867] Ibid.

technological work, then the work of addressing the social problem fell to those with more broadly defined societal responsibility and power.

Granted, just as Congress sought to ameliorate the social problem of Y2K, they often wound up exacerbating the problem as well. Part of the challenge here resulted from the somewhat opposed needs for Congress to be exerting pressure on the right sectors, while reassuring the broader public they should not panic. Though Congress sought to be Paul Revere and not Chicken Little, it is hard to deny that at times members of Congress contributed to the sense that the sky was about to fall. Representative Horn's report cards, especially those he issued in 1998, were far from reassuring documents, and though they helped exert pressure on government sectors to step up their efforts, those same report cards also provided fodder for those who were convinced that there was no way the government would be prepared in time. Compared to Horn's report cards, the reports issued by the Senate Special Committee were considerably less frightening, but even with a hundred days to go the Special Committee's reporting could not provide people with the clear reassurance that many in the public desired. Those who were alarmed about Y2K were able to back up their anxiety by pointing to the worrisome reports coming from the government itself, even as a sense of mistrust in the government led some to conclude that the government's glum predictions were surely understatements meant to disguise just how bad things really were.

Despite occasionally engaging in self-aggrandizing rhetoric or frightening hyperbole, the work conducted on Y2K within Congress maps comparably onto the sentiments that were coming from the experts within the IT community. At first there was great concern, that concern was amplified by the sense that not enough attention was being paid, which in turn led to attempts to increase the volume on the alarms, but once those alarms began to be heard it was a

matter of keeping attention focused on the problem so that it could be solved. By the final quarter of 1999, Horn was issuing a final grade of B+, and the Special Committee was predicting that Y2K would "cause more inconveniences than tragedies."[868] And though in the early weeks of the year 2000 much of the media was focused on the apocalyptic predictions that had not come to pass there was generally less acknowledgement of the fact that what had come to pass was more or less in keeping with what members of Congress had been anticipating by the final months of 1999.

At the surface level, Congress's efforts regarding Y2K were a significant bipartisan effort to manage a complex crisis that threatened the essential infrastructure on which the United States was dependent. And yet, just below that level, was also a wary acknowledgment of the way in which computers had quietly shifted power within the United States and the world. After all, it was not just the financial sector and the healthcare industry which needed the computers to work in order for them to be able to keep working. The government also needed the computers to keep working. As Senator Bennett noted, "We've learned that Y2K is not only preparing for the here and now, and for the immediate challenge of January 1st, it has also taught us things about the Information Age in which we have entered, and the whole new world in which we will live for a long time to come."[869]

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[868] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Investigating the Impact of the Year 2000 Problem: The 100 Day Report*. 1.

[869] Bennett. "Address by Senator Robert Bennettt (R-UT)." September 8, 1999.

Chapter Four: The Sky is Falling! The Sky is Falling…on this Magazine's Cover!

While families watched from home, Dick Clark stood on the townhall's steps hosting the final New Year's Rocking Eve of the millennium. Excitedly the crowd chanted the countdown as the year entered its last ten seconds, but after the fateful "one!" the excited shouts of "Happy New Year!" quickly turned into confused cries of "Happy New Wha!?!?" For the year atop townhall had switched not from 1999 to 2000, but from 1999 to 1900. Within seconds screams filled the crowd as traffic lights exploded, drivers lost control of their cars, rotating restaurants spun out of control, planes fell from the sky, and household appliances went on the attack. And all because the Y2K compliance officer at a small town's nuclear power plant had been derelict in his debugging duties, thereby triggering a calamitous domino effect causing anything and everything containing a computer chip to go haywire. Wandering through the chaos and looting that had overtaken the town's streets, a little girl walking with her family, commented "well look at the wonders of the computer age now." To which her father, the aforementioned negligent compliance officer, replied "wonders Lisa, or blunders?" to which the little girl retorted "I think that was implied by what I said."[870]

The family in question was none other than the Simpsons, from the cartoon bearing their name, and the scenes of Y2K wrought calamity were just a segment titled "Life's a Glitch, Then You Die" which was featured as an installment in the Simpsons' Halloween episode for 1999. The episode was quite explicitly about Y2K. After Dick Clark dedicated a song to "all you super

[870] The Simpsons, season 11, episode 4, "Treehouse of Horror X: Life's A Glitch, Then You Die." Twentieth Century Fox. Aired October 31, 1999.

geeks who rocked around the clock to exterminate America's Y2K bugs," Homer's coworker Lenny asked him "weren't you the plant's Y2K officer?" a question to which Homer's coworker Carl followed up with "must have been hard debugging all those computers, huh, Homer?" to which Homer replied in expected fashion with "doing what now?" And as soon as Lisa followed up with her comment that "even a single faulty unit could corrupt every other computer in the world," it was obvious to the viewer that Homer's failure was about to have disastrous results. Granted, these were to be disastrous results played up for humor. In the episode, the cascading Y2K failures that originated in Springfield ultimately culminated in the country's "brightest minds" boarding a rocket ship bound for Mars, that blasted off from the planet as it was being engulfed in, what can only assume were Y2K related, mushroom clouds.[871]

This dramatization of what could happen as 1999 became 2000 was obviously ridiculous. No one really believe that Y2K was going to cause waffle irons to develop a sudden taste for human blood, or that Y2K was going to result in streetlights suddenly firing lasers at people out on the streets. But those watching The Simpsons' take on Y2K had likely encountered stories warning that Y2K might result in blackouts, elevator failures, airplane turmoil, problems with embedded microchips, social unrest, and that noncompliant systems might cause cascading failures. After all, in its "100 Day Report" issued a little bit more than a month before this Simpsons episode aired, the Senate's Special Committee on Y2K had noted that they did not believe the US would "experience nation-wide social or economic collapse" but the committee still warned that "disruptions will occur and in some cases those disruptions would be

[871] Ibid.

significant."[872] The committee was not saying that planes would literally fall from the sky, but when a problem reaches a point that a Senate committee feels compelled to note that "nation-wide social or economic collapse" won't happen it forcefully raises the question as to how the apocalyptic tenor had become so ratcheted up as to necessitate such a statement.

With "Life's a Glitch, Then You Die," The Simpsons was simultaneously satirizing and reifying the way that Y2K had been framed in the United States. Certainly, the episode was engaging in absurd hyperbole—the waffle iron, a milk carton that stops working—but the episode was simultaneously drawing on warnings that it assumed would have been familiar to the average viewer—elevator issues, blackouts—while Lisa, functioning as the voice of reason, delivers admonitory warnings about "the wonders of the computer age." To the extent that The Simpsons was holding up a funhouse mirror to Y2K predictions, the fact remains that the episode could hold up a mirror because there was plenty of material ripe for warped reflecting. After all, in 1997 *Newsweek* had warned its readers in a Y2K cover story that as a result of Y2K, amongst other things: "The power may go out…the elevator that took you up to the party ballroom may be stuck in the ground floor…the traffic lights might be on the blink."[873] Similarly, reporting on *60 Minutes* in 1998, Steve Kroft informed viewers "If you fly in airplanes, depend on elevators, are hooked up to a water or sewer system, collect Medicare or Medicaid, visit automated bank tellers or use electricity, you're likely to have some part of your life disrupted."[874] The ominous tones from *Newsweek* and *60 Minutes* were kept in check by assurances that responsible experts

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[872] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Investigating the Year 2000 Problem: The 100 Day Report.* 106th Cong., 1st sess., September 22, 1999. S. Prt. 106-31. 8.
[873] Steven Levy; Katie Hafner; Gregory Vistica; and Rich Thomas. "The Day the World Shuts Down." *Newsweek* 129, Iss. 22. (June 2, 1997): 52-54, 56-59.
[874] *60 Minutes: Y2K* (1998). Directed by Steve Kroft. New York, NY: Columbia Broadcasting System, 1998. Aired November 29, 1998.

were hard at work on the problem, but what *The Simpsons* provocatively prodded back with was what would it mean if some of those ostensibly responsible experts were actually like Homer Simpson?

With their coverage of Y2K, many mainstream media outlets sought to have their doomsday rations without having to eat them too—as these outlets blended coverage that frequently leaned heavily in the direction of worst-case warnings, while carefully qualifying these portents with assurances that everything would be fine. Or at least that everything, would probably be fine. While Y2K was a major topic of interest and conversation within technical communities, as was discussed in Chapter 2, and was a major matter of concern for the US government, as was discussed in Chapter 3, the task of explaining Y2K to the general public was largely a responsibility that fell to legacy media outlets. And the ways in which these media outlets chose to present Y2K to the lay public presents a significant aspect of how the public came to understand Y2K. After all, not every software problem achieves a significant enough level of public awareness as to warrant inclusion in an episode of *The Simpsons*, or for that matter on the covers of *Newsweek* and *Time Magazine*, or receive its very own made for television movie.

Y2K was an economic problem that became a technological problem that became a social problem—and in explaining that technological problem to the public, media outlets helped turn Y2K into a social problem by providing lengthy lists of things that could go wrong, elevating the voices of survivalists, emphasizing uncertainty, and by generally stoking fears of impending doom (not least of which by using attention grabbing imagery). This chapter explores the media coverage of Y2K, and seeks to do so by engaging in close reading of several different pieces and bodies of coverage. These include: the coverage in *The New York Times*, coverage by *Newsweek*

and *Time Magazine*, episodes of *60 Minutes*, and the made for TV movie *Y2K: The Movie*. While these are certainly not the only media outlets to have covered Y2K, they have been selected as representative examples—*The New York Times* and *60 Minutes* largely as they are generally regarded as providing fairly sober analysis, while *Newsweek* and *Time Magazine* are considered specifically for the cover stories they devoted to Y2K, with *Y2K: The Movie* standing as a clear example of the US media turning Y2K into literal disaster fiction. Media outlets play an important role in framing threats and crises for a non-expert public, and this chapter will consider how those outlets contributed to the very apocalyptic tenor that they simultaneously critiqued.

When Lisa Simpson told Homer that "even a single faulty unit could corrupt every other computer in the world," he replied "that can't be true, honey. If it were, I'd be terrified."[875]

Clearly Homer hadn't been keeping up with the mass media's coverage of Y2K.

"The Day the World Crashes"

A giant computer screen emblazoned with the words "THE DAY THE WORLD CRASHES" is perhaps not the most reassuring way to introduce the public to a looming problem. Especially when those ominous all-caps appear just above the question "can we fix the 2000 computer bug before it's too late?"[876] And yet this is exactly how *Newsweek* presented Y2K in its June 2, 1997 issue, which featured the aforementioned menacing computer screen on its front cover. The computer monitor that graced the cover was a clipped version of the larger illustration, by John Eder, which accompanied the article which featured a crowd of pilots,

[875] The Simpsons, season 11, episode 4, "Treehouse of Horror X: Life's A Glitch, Then You Die." Twentieth Century Fox. Aired October 31, 1999.
[876] Levy et al. "The Day the World Shuts Down."

doctors, and assorted businesspeople fleeing in terror from an explosion of computer hardware (including keyboards, circuit boards, and floppy disks) as well as cash and a tax return form. While the imagery was quite literally overblown, rather than respond to the cover's question with a definitive "no," the article provided a litany of things that might go wrong, alongside a less than calming comment that "if we don't swat the millennium bug, we'll have troubles everywhere."[877]

In explaining "the Year 2000 Problem, Y2K, or the Millennium Bug" to the lay public, the article explained how the roots of this "ultimate indignity: the world laid low by two lousy digits" went back to the middle of the twentieth century and "a seemingly trivial space-saving trick."[878] Alas, none of the computer wizards who figured out that "trick," wanted to be the ones telling management of the problem, and as a result thanks to "nerddom" now that "digit-dropping trick has changed from clever to catastrophic."[879] And even though at the time of that article's publication the year 2000 remained two and a half years away, in terms of fixing the problem for those that "haven't started already it's just about too late."[880]

Though the article placed the blame for Y2K on the ranks of "nerddom," the article made it abundantly clear that danger was not isolated. And this is likely the most significant aspect of the cover story: that it emphasized to the readers that Y2K was their problem, for whether they realized it or not, their lives had become inextricably bound up with computers. Indeed, the article started by warning that power, ATMs, elevators, billing systems, cars, traffic lights, mail (including magazine subscriptions), government checks, and insurance—could all be

[877] Ibid, 54.
[878] Ibid.
[879] Ibid.
[880] Ibid.

disrupted.[881] Assuming the stance of the skeptical reader, the article asked whether the shift to 2000 could "really usher in a digital nightmare when our wired-up-the-wazoo civilization grinds to a halt?" and answered this by noting "Incredibly, according to computer experts, corporate information officers, congressional leaders and basically anyone who's given the matter a fair hearing, the answer is yes, yes, 2,000 times yes!"[882] Doom was not certain, its prevention only hinged on the ability to "successfully complete the most ambitious and costly technology project in history" and here "the payoff comes not in amassing riches or extending Web access, but securing raw survival."[883] And lest anyone should start feeling too hopeful, the article warned readers to "forget about a silver bullet," describing the quantity of Y2K related issues as appearing "more often than 'M*A*S*H/ reruns on television."[884]

While hyperbolic hypotheticals might conjure up anxiety, by their very outlandishness they often undermine their own scariness. Thus, the *Newsweek* cover story worked to inform readers that its hypotheticals were not nearly as hyperbolic as they might seem. Going down a list encompassing communications, medicine, weapons, money, food, air-traffic control, factories, and "just about everything else"—the article couched its commentary on things that might go wrong in references to issues that were already happening, and/or to notes from government sources or experts warning of problems.[885] These risks were in turn further emphasized in a side bar, optimistically titled "The Sky is Falling, the Sky is Falling" which contrasted the "worst scenario" with what was "likely to happen"—and while the "likely to happen" scenarios fell short of "worst scenarios" (one of which included "radiation problems

[881] Ibid.
[882] Ibid.
[883] Ibid.
[884] Ibid.
[885] Dante Chinni. "The Sky Is Falling, the Sky Is Falling!" *Newsweek* 129, Iss. 22. (June 2, 1997): 57.

make Three Mile Island look like a picnic"), they still did not qualify as everything being fine.[886] And in trying to gauge whether the "worst case" could be avoided, it was difficult not to read those scenarios alongside comments stating that "even the most diligent companies don't have total confidence they can fix everything."[887]

Early in the cover story, the writers backed up the dark tonality of their piece by referencing "computer experts, corporate information officers, congressional leaders and basically anyone who's given the matter a fair hearing" as the reason for the article's foreboding tone. Rather than devote attention to those advising a retreat from civilization as the only possible path, the article kept its focus on warnings coming not from the apocalyptic fringe. Instead, the voices that spoke in the *Newsweek* cover story included the likes of: David Iacino (head of BankBoston's Team 2000), Representative Stephen Horn (fresh off his Y2K report cards that had given NASA and the Veterans Administration D's), as well as computer professionals Capers Jones and Leon Kappelman. Thus, it was not so much that *Newsweek* was saying Y2K was "like an iceberg" but that those words were a quotation from "academic and Y2K consultant" Leon Kappelman.[888] While the article ended with a particularly ominous "tick, tick, tick, tick tick," prior to that it had given the last word to Nigel Martin-Jones of Data Dimensions (a company "on the front lines of Y2K: with "less than a thousand days" left, Martin-Jones put it starkly, "There are two kinds of people…Those who aren't working on it and aren't' worried, and those who are working on it and are terrified." [889]

[886] Ibid.
[887] Ibid.
[888] Levy et al. "The Day the World Shuts Down," 59.
[889] Ibid.

"The Day The World Shuts Down" represents a particular sort of approach to informing the public about Y2K, one that sought to make it clear how the dangers posed by "wired-up-the-wazoo civilization" threaten all of those who live in such a civilization. While placing a gloomy focus on "worst scenarios" and a list of things that could go wrong, the article sought to carefully insulate itself from accusations of irresponsible fear-mongering by continually noting that insofar as the article was grim it was only mirroring the sentiments coming from the recognized experts. They were the ones voicing such serious concerns, and *Newsweek* was only doing the responsible journalistic work of ensuring that the public was informed. While there was some mild levity to be found in the article (a cartoon by Larry Gonick titled "The Birth of a Computer Catastrophe" presented programmers as ten-gallon hat wearing "COBOL cowboys"),[890] the article presented Y2K as a serious matter, and treated those who were issuing dire warnings as genuine experts whose warnings were worthy of respect. This was largely the way in which *Newsweek* chose to frame Y2K across its coverage of the crisis. And while "The Day the World Shuts Down" was the only cover that *Newsweek* devoted to the matter, it was hardly the only time that the magazine devoted page space to the issue. And yet, across the articles *Newsweek* ran about Y2K, the two dominant leitmotifs were: an elevation of the voices of Y2K experts, alongside a deeper level of commentary that Y2K could be seen as revealing something fundamental about how computers had changed civilization.

Just shy of a year before *Newsweek's* Y2K cover story, Steven Levy (who was one of the co-authors of that cover story), penned *Newsweek's* first major article on Y2K. And that piece "The 1,000 year Glitch," largely established the model that "The Day the World Shuts Down" (and the later coverage) would follow. In the 1996 piece, Levy opened by tapping into latent

[890] Ibid.

computer frustration by noting "If you've ever felt that computers were a scourge upon the earth, just wait three and half years or so," and he noted that during the final hours of 1999 "our entire information infrastructure will be ticking toward doom."[891] As Levy put it "we may have to reboot modern civilization."[892] On the one hand, Levy noted that "a booming cottage industry of doomsayers and dread merchants" had been "preaching" about this danger, yet he also noted "It's a message that people don't want to hear."[893] And in seeking out those "doomsayers," Levy did not turn to the apocalyptic fringe, but to reputable business and computer experts. Not sackcloth clad Jeremiahs, but gray-suited professionals. With help from "Millennium Bug guru" Peter de Jager, Levy's 1996 article framed Y2K as a foreseeable problem that got passed on as a result, in de Jager's words, of "procrastination, a conspiracy of compromise."[894] Granted, to the extent the computer experts in Levy's 1996 piece were noting that time was in short supply, by the time *Newsweek* devoted its cover to Y2K there was even less time.

Having clearly staked out the importance of Y2K with that cover story, *Newsweek* kept an eye on Y2K in order to keep its readers informed of the latest developments. After all, as a piece from 1998 put it, Y2K had become a "favorite focus of incendiary gossip."[895] Nevertheless, in keeping with its tendency to defer to the experts, within that same 1998 piece, *Newsweek* noted that amongst many of the experts the assessment was shifting in an increasingly positive direction. While there was certainly a great deal of work that needed to be done, *Newsweek's* coverage emphasized that the work was being done, and thus "whether to truck with

[891] Steven Levy. "The Year 1,000 Glitch." *Newsweek*. Vol. 127, Iss. 26. (June 24, 1996). 92.
[892] Ibid.
[893] Ibid.
[894] Ibid.
[895] Jane Bryant Quinn and Temma Ehrenfeld. "Bugged By Y2K?" *Newsweek* 132, Iss. 9. (August 31, 1998): 48.

the Pollyannas or the Cassandras may be a matter of temperament."[896] And *Newsweek* remained committed to presenting the voices of both the "Pollyannas" and the "Cassandras." One such case of "Cassandra" can be seen in Robert Samuelson's description of Y2K as a "self-inflicted cyber wound," in which Samuelson predicted that 1999 would be spent "wondering whether the Y2K problem is a genuine menace or just a bad techno-joke" while noting that "the outlook is not entirely bleak."[897] Yet, at the core of Samuelson's argument was an analysis that saw Y2K as "the ultimate vindication" of C.P. Snow's "Two Cultures" thesis, as Y2K demonstrated the immense gulf that had widened between those who created these computer systems and the massive number of people who relied on them. As Samuelson put it "the legitimacy of the Y2K problem was never in doubt," rather the problem was that "the technologists making the warnings could not really talk with their intended audience."[898] In contrast, Danny Hillis offered a more "Pollyana" like pronouncement several months later, predicting that when 2000 rolled around some hotel guests would not get their wake up calls and some dog licenses would not expire, but that would be the extent of the turmoil.[899] For Hillis, Y2K had become so hyped up thanks to a combination of "Convincing Detail, Cooperative Experts and a Hint of Deeper Truth."[900] And while Hillis struck a reassuring tone about Y2K itself, he located its resonance in a recognition that what Y2K revealed "is that technology has become so complicated that we no longer understand it."[901] Hillis plainly stated that "the Y2K apocalypse is a myth" and yet he pivoted from this to note "the truth is not that civilization will come to an end, but rather that civilization as we once knew it has ended already. We are no longer in complete command of our

[896] Ibid.
[897] Robert J. Samuelson. "Self-Inflicted Cyber Wound?" *Newsweek* 132, Iss. 24. (December 14, 1998): 51.
[898] Ibid.
[899] Danny Hillis. "Why Do We Buy the Myth of Y2K?" *Newsweek* 133, Iss. 22. (May 31, 1999): 12.
[900] Ibid.
[901] Ibid.

creations. We are back in the jungle, only this time it is a jungle of our own creation. The technological environment we live within is something to be manipulated and influenced, but never again something to control."[902]

The waning months of 1999 saw *Newsweek*'s Y2K coverage keeping pace with the growing sentiment amongst experts that problems would be minimal, even as *Newsweek* continued to comment on Y2K's societal presence. Thus, *Newsweek* noted how Y2K paranoia was leading many people to stock up on the sorts of low-tech solutions often favored by the Amish.[903] Y2K could still be treated as "a computer-decreed day of reckoning,"[904] even as it increasingly seemed that the only ones predicting a Y2K cataclysm were those on the religious fringe.[905] With 2000 growing ever closer, "Y2K pessimists" were "approaching their moment of truth" but investors no longer seemed particularly worried that anything would go wrong.[906] With less than a month to go, the question was no longer "can we fix the 2000 computer bug before it's too late?" but instead the significantly less worrisome "will the bug bite?"[907] And here the attention shifted significantly to international issues, while emphasizing the efforts being undertaken by the US to ensure that essential infrastructure elsewhere (such as Russian nuclear power plants) would continue to function. While still relying heavily on the voices of experts, in the final weeks of 1999, *Newsweek* was now quoting them saying Y2K might be a "nonevent."[908]

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[902] Ibid.
[903] Ibid.
[904] Peter McGrath. "Potholes on the Road Ahead." *Newsweek* 134, Iss. 12 (October 11, 1999): 78.
[905] John Leland; Anne Underwood; Matt Rees; Jill Jordan Sieden; and Andrew Murr. "Millennium Madness." *Newsweek* 134, Iss. 18 (November 1, 1999): 70-71.
[906] Jane Bryant Quinn and Temma Ehrenfeld. "Who's Afraid of Year 2K?" *Newsweek* 134, Iss. 21 (November 22, 1999): 63.
[907] Richard Ernsberger Jr.; Owen Matthews; Leslie Pappas; Maggie Ford; and Mac Margolis. "Will the Bug Bite." *Newsweek*. December 6, 1999. (https://www.newsweek.com/will-bug-bite-163086)
[908] Ibid.

In its 1997 cover story on Y2K, *Newsweek* quoted the "digital Jeremiah" Peter de Jager in regards to his own efforts to sound the alarm on Y2K. As de Jager put it "if we shout from the rooftops, they accuse us of hype…but if we whisper in an alley, no one will listen."[909] And for its part, *Newsweek*'s coverage of Y2K tried to find the safe medium between shouting from the rooftops and whispering in an alley—drawing attention to and elevating the seriousness of the crisis while taking care to do so in a way that highlighted the voices of experts, and emphasizing how the views of those experts were changing (becoming more optimistic) over time. While the 1997 cover may have been a reflection of apocalyptic excess, as the Y2K experts grew more positive in regards to the likely outcomes, *Newsweek* stayed with them instead of maintaining a focus on the apocalyptic story that would have required a hard pivot to those stocking up on canned goods and ammunition. *Newsweek*'s coverage of Y2K clearly laid out the existence of a problem, outlined the risks, drew attention to the work being done, and kept its readers informed of the progress being made—all the while providing a nuanced consideration of some of the ways that computers had truly changed society.

"Now the biggest problem seems to be disposing of all that tuna fish we stocked up on" joked Steven Levy in the early days of 2000 after the bug failed to bite.[910] The happy result surpassed the expectations of "even the wildest Y2K optimist."[911] The question of whether or not there had been an overreaction was thus not only about justifying the money spent, but also the amount of attention that had been devoted to the problem, including by figures like Levy—though to the question of whether it was an overreaction, Levy offered a clear "I don't think

[909] Levy et al. "The Day the World Shuts Down," 57.
[910] Steven Levy. "The Bug That Didn't Bite." *Newsweek*. January 10, 2000. 41
[911] Ibid.

so."[912] Companies would have loved to avoid spending the sums they did on Y2K, but Levy noted that they did so because their own tests proved they had real problems, similarly "the government would have been criminally derelict" not to take the problem seriously.[913] The results could be hard to see, but "money spent to avoid loss of life is always money well spent," and in order to get the work done "programmers reasonably had to assume that the worst would happen."[914] Yet in the end "the machines, with our help, muddled through."[915]

And though it does not seem that with the "our" in "our help" Levy was drawing attention to the work done by reporters such as himself. Those reporters, such as Levy, certainly deserve some portion of the credit.

"Millennium Madness!"

The countdown had reached zero, and now cars were stuck in traffic, malfunctioning streetlights were displaying all colors at once, dead computers were raining from the sky, and a barefoot long-haired figure in a flowing white robe holding aloft a cross was walking down the street while wearing a sandwich board reading "THE END OF THE WORLD!?! Y2K Insanity! Apocalypse Now! Will computers melt down? Will society? A guide to MILLENNIUM MADNESS!"—at least this was the image that graced the cover of the January 18, 1999 issue of *Time Magazine*.[916] With less than a year until the actual countdown clocks truly reached zero, *Time*'s cover story directed mocking attention towards "millennium madness" while

[912] Ibid.
[913] Ibid.
[914] Ibid.
[915] Ibid.
[916] Richard Lacayo. "The End of the World as We Know It?" *Time Magazine* 153, Iss. 2 (January 18, 1999): 60-70, Cover.

simultaneously contributing to and capitalizing on that anxiety. On the cover, a "walk/don't walk" sign had transformed into a "Panic/Don't Panic" sign—and considering that the "Panic" was lit up in bold white characters while the "Don't Panic" was at the same time highlighted in red, it was not entirely clear which of the two the magazine was counseling.

The article began with a description of Y2K preparedness; however, it was not a story that focused on a work of computer professionals or a mid-level bureaucrat. Instead, it consisted of a visit to a rural area in Ohio where the Eckhart family had purchased a "gas-powered home generator," a "year's supply of dehydrated food," and a waterbed as it allowed them to have "an extra 300 gallons on hand." The Eckhart's were described as "models of apocalyptic pluck," who after seeing "newspaper articles mentioning the computer glitch" had found themselves turning to an Internet "full of alarming Y2K websites" which had led Bruce Eckhart to conclude that the problem would not get fixed in time.[917] Though the family was having difficulty "winning over community leaders," they were getting themselves ready, Diane Eckhart was even trying to teach "herself rudimentary dentistry and field medicine."[918] And, of course, the family had also "laid in two rifles, a shotgun, and a handgun."[919] Despite the dramatic extent of their activities, Diane Eckhart framed the family's actions in terms of general readiness, as she is quoted as saying "Scouts prepare for emergencies lasting 72 hours…We just want to extend that to six months."[920]

As "The End of the World as We Know It?" the article accompanying the "Millennium Madness" cover made clear, the type of "madness" it had in mind was the sort pertaining to those convinced that Y2K was not just a software problem, but would also bring about the

[917] Ibid, 60-2.
[918] Ibid, 62.
[919] Ibid.
[920] Ibid.

apocalypse—be that in terms of a secular societal collapse, or the capital-A Apocalypse prophesied in the bible. Emphasizing that "apocalyptic fantasies" and "death-wish fantasies" are not new cultural features, the article noted that with Y2K "religious millennialism has once again found a real world problem on which to hang its visions of doom."[921] In assessing the "real world problem" the article noted that while experts were divided on "how bad the Y2K computer problem will be" the general "consensus among sensible experts" was that "dire predictions of major social disruptions are way overblown."[922] However, given that the cover image had made clear this would be a story about "millennium madness," it should not come as a surprise that the article spent considerably less time with "sensible experts" and considerably more time with those who were convinced the world was about to end.

The tour through the apocalyptic fringe included stops with a "conservative Christian humanitarian effort" in Colorado called AD2000, the physician head of which warned that health care would not be prepared while casting doubt at government claims by stating "nothing should be taken at face value when it comes to government assurances."[923] The Christian Reconstructionist, and prominent Y2K commentator Gary North—who the article refers to as "Scary Gary"—is described as simultaneously noting "there is nothing we can do" even as he suggest people "buy gold and grain; quit your job; and find a remote cabin safe from the rioting hordes" while also spending $225 for a two-year subscription to his newsletter.[924] In contrast to "Scary Gary" is Karen Anderson—"if Martha Stewart ran a survivalist sect"—whose Y2K

[921] Ibid, 63.
[922] Ibid, 63-64.
[923] Ibid. 64.
[924] Ibid. 68. North declined to be interviewed for the article.

manual is described as something akin to a "homemaker's guide to apocalypse preparedness."[925] Furthermore, the article makes clear that "millennium madness" had also gripped prominent Christian figures including Jerry Falwell and Pat Robertson—both of whom were offering their followers Y2K related videos.[926] And alongside all of the religiously inflected "millennialism" there was also a smattering of "secular survivalists" such as the prominent computer programmer Ed Yourdon, whose book *Time Bomb 2000* had entered its 12th printing, even as he and his family had decamped Manhattan for the safety and isolation of Taos, New Mexico.[927] While AD2000 saw its secular equivalent in groups like Paloma O'Riley's "Cassandra Project" whose "online Y2K advice network…gets half a million hits a month at its website."[928] Turning to Senator Robert Bennett, the chair of the Senate's Year 2000 Committee, the article cited not his reassurances that the software problem was being fixed, but his concern that public panic could trigger problems such as "bank runs stoked by fear" which "could be as bad as actual computer-generated bank problems."[929] And while the article had focused on figures seemingly on the fringe, a black box containing the results of poll conducted by *Time Magazine* and *CNN* noted that 59% of respondents claimed to be "somewhat/very concerned" about Y2K.[930]

Though the matter undergirding all of this apocalyptic anxiety was a software problem, *Time*'s cover story was not hyper-focused on computers. The article framed "the Y2K bug" as being "something akin to the original sin of technological society, a mortal flaw bred in the very bones of the modern world," yet the focus on "original sin" was in keeping the software crisis

[925] Ibid. 69.
[926] Ibid. 62, 64.
[927] Ibid. 67.
[928] Ibid.
[929] Ibid. 70.
[930] Ibid, 64.

grounded in an assessment of religious reaction.[931] Nevertheless, "The End of the World as We Know It?" was followed up by a two page piece on "The History and the Hype" wherein Y2K was presented not as fodder for doom-mongering, but as a matter of genuine technical concern.[932] Here, while acknowledging that the "dire predictions" were unlikely to come true, the article nevertheless noted that "a little computer-generated chaos would provide a fitting conclusion to a 40-year story of human frailties…and a tendency to rush into new technologies before thinking them through."[933] As the article made clear, people within the computer world had been warning about the date problem for forty years, only for those warnings to largely go ignored; and by the time Peter de Jager began ringing the tocsin in the 1990s time was running out.[934] Luckily, "from 1995 on, Y2K awareness had a kind of critical mass" though the article suggested "after making too little of the problem for so long, everybody began to make, if anything, too much of it."[935] And yet, "The History and the Hype" did not direct the sort of mocking contempt towards the technical experts that "The End of the World as We Know It?" had directed at religious survivalists. After all, "the alarmist language may yet be justified" given the scale of the work that still needed to be completed.[936] And the short article closed out with a prescient prophecy that "whether we'll be glad we were panicked into action or we'll disown the doomsayers depends on how diligently the programmers do their job in the next 50 weeks."[937]

The juxtaposition between "The End of the World as We Know It?" and "The History and the Hype" represents a concise summary of *Time Magazine*'s overall approach to Y2K:

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[931] Ibid, 68.
[932] Chris Taylor. "The History and the Hype." *Time Magazine* 153, Iss. 2 (January 18, 1999): 72-73.
[933] Ibid, 72.
[934] Ibid, 73.
[935] Ibid.
[936] Ibid.
[937] Ibid.

provide a somewhat humorous and rather mocking attitude towards the software crisis which elevates the most apocalyptically minded figures, while providing some (but significantly less) recognition of the reality of the technical problem and its potential significance for society. Or, to put it plainly, *Time Magazine*'s Y2K coverage seemingly wanted to mock "millennium madness" while also participating in it—trying to provide responsible information to worried readers, while also amping their anxieties. Within "The End of the World as We Know It?" this plays out clearly in a "Guides for the Perplexed and the Paranoid" section that suggests a variety of guides that largely mirror the tone of the larger piece.[938] Rather than provide a brief summary of the selected guides, the box provided a lengthy quotation from each work that seems to have been selected based on the chosen quotation's hyperbolic aspects. The works selected included the religious *What Will Become of Us?* a "secular survivalist" in the form of the Utne Reader's *Y2K Citizen's Action Guide* and one that was even credited to a PhD *You and the Year 2000*. Alongside these, there was also the American Red Cross's *Safety Y2K* (which was not actually a book but a website), as well as the number of the government's Y2K consumer hotline and a link to the government's Y2K website. As the box put it "advice" from source such as those it was giving as examples "can raise blood pressure, even as it seeks to reassure."[939]

Over the course of most of its Y2K coverage, *Time Magazine* stuck with the formula that was so clearly on display with its January 18, 1999 cover story. Y2K had clearly become a sizable enough cultural phenomena that *Time* could not simply ignore it, but rather than engage with it as a software crisis that might pose serious risks for its readers, *Time* tended to maintain a focus that treated Y2K as a bit of a joke, and those who took it seriously as being worthy of

[938] Lacayo. "The End of the World as We Know It?" 68.
[939] Ibid.

derision. Focus of the sort in "The History and the Hype" was continually overshadowed by material of the sort in "The End of the World as We Know It?" Rather than focus on drab technical details, or speak with technical experts who were likely to speak in carefully qualified predictions while emphasizing that things would probably work out, *Time*'s focus was largely on the most apocalyptically minded individuals. By treating Y2K as something only worthy of concern for the apocalyptic fringe (who are always panicking about something), *Time*'s coverage undermined the seriousness of Y2K, even as the moments when *Time* quoted actual technical experts reminded readers that the source of the apocalyptic fringe's anxiety was not completely made up.

"The End of the World as We Know It?" was not *Time*'s first lengthy article on Y2K, though a somewhat similar article had appeared in the magazine in June of 1998. "Apocalypse Not" also started with a quick profile of someone heading for the hinterlands in anticipation of coming computer wrought calamity, though instead of wallowing in Armageddon, as the article's title suggested the focus of this piece was less on the apocalypse and more on the "not."[940] While acknowledging "the mounting angst over the Year 2000 glitch, particularly on the Internet," this 1998 article countered that "angst" by highlighting that "most of the folks responsible for fixing the nation's electronic infrastructure actually think we're going to make it into the next millennium with only minor, if any, disruptions of vital services."[941] And while there was a recognition that the US government still had quite a lot of work to do, the focus was on how committed the various responsible parties were to making sure the work was finished on time. To the extent that "anxiety may outstrip reality" it also seemed that the "anxiety" was propelling

[940] Chris O'Malley and Declan McCullagh. "Apocalypse Not." *Time Magazine* 151, Iss. 23. (June 15, 1998): 62-65.
[941] Ibid.

many industries to get the job done. Thus, Jim Duggan (one of the Y2K experts from the Gartner Group) noted "It's going to be like a couple of inches of snow that stays on the ground for a few days."[942]

Of course, a story about competent computer professionals doing the work to avert a crisis does not make for the most exciting story. It's far more exciting to talk of people stocking up on canned goods and guns than computer programmers noting that they are doing their jobs. Post-cover story, as the countdown clock wound down on 1999, *Time* did not turn away from Y2K, but maintained the same rather snide stance towards it. A colorful little chart in March of 1999 juxtaposed scenarios of "Everything's Rosy" with "The Sky is Falling" to draw out what might (or might not) happen to telephones, food, the duration of the problem, and air travel—making sure to point to sources for the "Rosy" and "Falling" scenarios.[943] And it is worth noting that many of the sources for the "Falling" scenarios were largely either government or technical reports. A general sense of Y2K exhaustion was satirized by Christopher Buckley, with only a little bit more than a month left in 1999, Buckley forecasted that once 2000 actually hit it would give rise to "a resentment born of the suspicion that all along the media were up to their usual tricks, hyping a national calamity to the max in order to make us buy more copies and tune into TV specials titled The Day the Food Ran Out."[944] As Buckley saw it, it would only be a matter of time before the media shifted "to the next installment of the-end-of-civilization-as-we-know-it" which he predicted would be "the prospect of Donald Trump's becoming president."[945] And to the extent that Buckley's comments could be seen as a critique of *Time* itself, the magazine

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[942] Ibid.
[943] Harrie Barovick; Daniel Levy; Lina Lofaro; Michele Orecklin; David Spitz; Flora Tartakovsky; and Chris Taylor. "Y2K: Still Waiting." *Time Magazine* 153, Iss. 10 (March 15, 1999): 26.
[944] Christopher Buckley. "Ask Doctor Y2K." *Time Magazine* 154, Iss. 22. (November 29, 1999): 124.
[945] Ibid.

also acknowledged that "the Y2K problem has morphed from potential cataclysm to commercial punch line," adding "We should all be so lucky as to have another boring New Year's."[946]

Time took the start of the year 2000 as an opportunity to check back in on some of the figures it had profiled a year earlier. The Eckharts seemed to be taking the lack of calamity with good humor, considering their stockpile of canned goods, Diane Eckhart noted "I'm going to save on groceries" and further joked that she might "buy a Jacuzzi or a new computer" with the money saved.[947] Karen Anderson, in contrast, had already shifted to the next potential bite from the millennium bug, noting that there was still the risk of problems on February 29 related to the leap year.[948] *Time* maintained its playful tone, considering the amount of time and money that had been devoted to Y2K, it commented that "it is still unclear whether that was money partly wasted or money that saved us from a meltdown, but any funds that happened to be spent on ensuring the safe, swift delivery of newsmagazines is money well spent." [949] The article closed with an admonition for everyone to "emerge from your Y2K bunker as your father did from his bomb shelter after the Cuban missile crisis and as your forefather did from his cave when the first eclipse passed."[950]

Was it a miracle that nothing had happened? No, it wasn't. But also, Yes, it was.

"For Computers, the Year 2000 May Prove a Bit Traumatic"

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[946] James Poniewozik; Nancy Harbert; David S. Jackson; Elaine Marshall; Mark Shuman; and Jake Sullivan. "Auld Lang Sigh." *Time Magazine* 154, Iss. 22. (November 29, 1999): 56-66.
[947] Joel Stein. "Hey, You in that Bunker, You Can Come Out Now!" *Time Magazine* 155, Iss. 1 (January 1, 2000): 54-58.
[948] Ibid.
[949] Ibid.
[950] Ibid.

According to coverage in *The New York Times* "The dawn of the new century may come as a shock to thousands of computers around the world."[951] As the article's author, Barnaby J. Feder, went on to explain, there was some disagreement in the computer world as to just how serious a problem this really represented, "everyone agrees that the blind spot exists" but "expert opinion differs widely about how pressing the problem is and how to address it."[952] The problem in question went all the way back to the 1960s, and the decision by computer programmers working then to use two characters instead of four to represent year dates. Alas, now this "oddity" had the potential to "affect such things as insurance coverage, receipts and payments by businesses, inventories and factory production." In the words of a source at an insurance firm, this had the potential to be "an absolute horror show for anyone with mainframe computers," while another source from within the Social Security Administration stated ominously, "Those who don't take it seriously are going to be faced with a real problem in the late 1990's."[953]

Luckily, there was still plenty of time. For the date on which that article was published was May 7, 1988.

To the question of whether or not a failure "to take it seriously" was going to result in "a real problem in the late 1990's" one need look no farther than *The Times* itself for an answer. As a little bit more than ten years later, in an editorial titled "The Millennium Bug," *The Times* warned that "On Jan. 1, 2000, the world will probably wake up with a hangover."[954] Placing the origin of the "bug" in a programming decision made decades earlier, *The Times* noted that it was a problem that threatened "the processors and chips that have made their way into every aspect

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[951] Barnaby J. Feder. "For Computers, the Year 2000 May Prove a Bit Traumatic." *The New York Times*. May 7, 1988. A1, A41. A1.
[952] Ibid.
[953] Ibid, A41.
[954] Editorial Board. "The Millennium Bug." *The New York Times*. May 28, 1998. A28.

of modern life" and now with less than two years until the fateful deadline "Y2K fever is mounting."[955] Venting about the problem, and in particular with "an industry that is downright apostolic about the future," *The Times* concluded its editorial with frustration that "no one saw the millennium coming until it was just this close."[956] Granted, *The Times* had itself seen "the millennium" and "the millennium bug" coming more than a decade previously. And what's more *The Times* journalist who had written about Y2K in 1988, Feder, was still writing much of *The Times'* coverage of Y2K a decade later.

Read through the lens of *The Times*' Y2K coverage "in the late 1990's," Feder's 1988 article appears as prophetic in a way that is unsettling, if somewhat humorous. For the 1988 article makes it clear that the problem was known, that it was recognized that the challenge was time (not the actual technical complexity of the work itself), and the article made it clear that a failure to act was going to create trouble later. Nevertheless, as Richard Harrison, who was the General Service Administration's director of the federal software management support division noted in that article from 1988, "The average programmer never thinks beyond next Tuesday."[957] Besides, as a Defense Department employee noted, "Our projections for the development of artificial intelligence systems suggests that by 1994 and 1995, they may be able to handle most of this relatively easily," and even if those advancements in AI did not turn up on schedule it was expected that "a slew of entrepreneurs" would "emerge with software and consulting services focused on date problems as the new millennium draws closer."[958] The 1988 article concluded with Harrison noting "Very few people are thinking about it yet," but the article makes clear that

[955] Ibid.
[956] Ibid.
[957] Feder. "For Computers, the Year 2000 May Prove a Bit Traumatic." A41.
[958] Ibid.

"very few people" is not synonymous with nobody, and furthermore the article made clear that more people needed to start "thinking about it" soon.[959]

While its 1988 coverage demonstrates that *The Times* was early to covering the year 2000 computing crisis, the bulk of its coverage occurred in the final three years of the 1990s—which is in keeping with the general level of public awareness of, and interest in, Y2K. Relying heavily on government and expert sources, *The Times* consistently treated Y2K as a serious matter worthy of serious coverage. Though *The Times*, much like other media outlets, could not completely resist the opportunity to take some short forays through the apocalyptic fringe, the bulk of its coverage focused closely on the commentary of figures within the government and respected voices in and around the computing sectors. In its analysis, *The Times* also captured the many ways in which Y2K could not be treated as merely an isolated technological matter, and its coverage of Y2K focused on political, economic, and international implications as well. Thus, Y2K coverage was not limited to a single section of coverage, and content about Y2K did not appear solely in the technology section: it was a matter of concern that earned the attention of the editorial board, and on multiple occasions Y2K made it onto the paper's frontpage, "above the fold" at that. The tone of *The Times'* Y2K coverage is closely bound up with the tone of the various sources upon which *The Times* was relying—and the overall coverage found in *The Times* tracks the shift from concern to growing calm. While *The Times* frequently gave space to somewhat conflicting assessments—more pessimistic views were often contrasted with the reassurances of John Koskinen—the balance that was provided was typically one that privileged expert voices. Overall, *The Times* coverage of Y2K can be framed as an assessment that Y2K was a serious matter, being taken seriously by serious people, and thus it was deserving of

[959] Ibid.

serious coverage by *the* serious newspaper. Any attempt to quantify exactly how many articles *The Times* ran regarding Y2K will be skewed by the question of what precisely counts. Nevertheless, in the 1990s, on its website, *The Times* provided several index pages of their Y2K coverage. The 1998 page features thirty-six entries (including a three part special report),[960] while the 1999 page (which includes a breakdown of coverage by month) features ninety-two entries for 1999 (as well as thirteen from the first week of 2000).[961] And while one hundred and twenty-eight articles over a two year period may sound like an impressive amount of coverage, it is essential to note that just in that two year period *The Times* published a significant number of Y2K related articles that do not appear on either of those index pages. For the purposes of analysis in this section, focus will be placed on three front page, "above the fold," Y2K related articles—one each from 1997, 1998, and 1999—alongside some briefer commentary on the rest of *The Times'* coverage, with the intent being to accurately and adequately capture *The Times* coverage while noting how that coverage shifted as the "millennium bug" showed its fangs.

When people hear of high-tech companies, the sorts of businesses that first come to mind are probably not mid-sized shoemakers in the Midwest. And yet, "Computers Are the Future But Remain Unready for It," which appeared on the front page of *The New York Times* on April 7, 1997, began by talking about what "the millennium virus" would mean for Mason Shoe.[962] As the article explained, Mason Shoe relied on "a bank of Hewlet-Packard 9000 computers" for tasks ranging from paying bills to ordering material—nearly all of these functions involved the computers making sense of a date. And thus, this humble Wisconsin shoe company "is suffering

[960] "1998 Coverage of the Y2K Problem." Archived at *The New York Times* (https://archive.nytimes.com/www.nytimes.com/library/tech/reference/millennium-index-98.html)
[961] "The Year 2000 Problem." Archived at *The New York Times.* https://archive.nytimes.com/www.nytimes.com/library/tech/reference/millennium-index.html
[962] John M. Broder with Laurence Zuckerman. "Computers Are the Future But Remain Unready for It." *The New York Times*. April 7, 1997. A1, D11.

its own small share of a looming global quagmire known as the year 2000 problem."[963] While acknowledging that "doomsday scenarios" had "become a staple of the computer industry trade press" the article emphasized that "almost all" of the experts consulted for the article expected "the life-threatening problems to be dealt with beforehand" even as they admitted "that unanticipated troubles could arise."[964] Granted, the cost of dealing with the problems could be quite steep, and the article pointed to Sally Katzen's estimate that the cost at the federal level would be around $2.3 billion, while the Gartner Group predicted global costs between $300 and $600 billion, even Mason Shoe was "reluctantly budgeting $500,000."[965]

In explaining how year 2000 had become an issue, the article provided a brief history, emphasizing that the reason the problem had been allowed to fester was that it had been "largely ignored as a result of denial, delay and misplaced faith in a quick technological fix," but now the deadline was looming and no "silver bullet" had been devised.[966] Though many of the problems were in one way or another associated with COBOL, the issues were exacerbated by the numerous "legacy" systems upon which many companies depended. Despite the potential dramatic risks, the actual work of fixing the problem was neither "glamorous or mysterious," indeed "it is boring, grinding and ultimately unsatisfying work, like resetting the VCR."[967] Given the banality of the work itself, what made things so problematic was the combination of the amount of work that needed to be done, and the swiftly diminishing time frame in which to do it—and beyond repair time, it was also necessary to have time set aside for testing everything.[968] Some firms had already gotten to work, and the warning sirens had been sounding already for

[963] Ibid, A1.
[964] Ibid.
[965] Ibid, D11.
[966] Ibid.
[967] Ibid.
[968] Ibid.

several years, but this was no longer a problem that could be deferred: "without proper attention now, manufacturers could grind to a halt as their inventory systems break down."[969] And beyond the computer issues themselves, lawyers were also "gearing up" for what threatened to be an avalanche of lawsuits as companies sought to shift the blame off themselves.[970] Furthermore, if humble Mason Shoe was threatened, it was clear that the federal government would be in even greater peril. Yet, as one "millennium-bug exorcist" put it the problem was "not the product of a devilish computer industry plot…but rather of the unexpected longevity of computer programs and of the procrastination of industry and government officials."[971]

With "Computers Are the Future But Remain Unready for It," *The Times* captured a country groggily, and unhappily, waking up to a looming problem. Despite some very brief allusions to "doomsday," the article spent no time traipsing through the apocalyptic fringe, instead keeping its focus on the way that the year 2000 problem was a serious threat. Though federal computer systems as well as banks were referenced in the article, the focus on Mason Shoe drove home that this problem had wide-ranging implications for any and all businesses which were highly reliant on computer systems—which, frankly, described pretty much all businesses. As for the expert voices the article elevated, several were to be consistent characters in *The Times'* Y2K coverage: Peter de Jager, Bruce McConnell, and various individuals associated with the Gartner Group. And though, considering his omnipresence in later coverage, John Koskinen is notably absent from the piece, this can be attributed simply to the fact that he had not yet been appointed by President Clinton to serve as the White House's Y2K czar. Based on expert assessments, the article predicted that the millennium "will probably end not with a

[969] Ibid.
[970] Ibid.
[971] Ibid.

calamitous computer crash but with many expensive and disruptive headaches."[972] Nevertheless, the article staked out a position that treated the problem as serious, as requiring work, and one in which "disruptive headaches" represented something of a best case scenario.

If nuclear anxiety had been the hallmark of the Cold War, it seemed that fear of Y2K was the apocalypse du jour for "the code war." And though "the code war" never really caught on as a descriptor for Y2K, it was still the framing used in the December 27, 1998 front page article "Computers and Year 2000: A Race for Security (and Against Time)."[973] The article began with a description of the code warrior Lyudmila Zavlyanova who was sitting in front of a computer screen in New Jersey zapping away at the Y2K issues that threatened "today's wired society."[974] While the code that Zavlyanova and her fellow code warriors were sifting through "to the uninitiated, resembles gibberish" they had been making their way through some "7 million lines of code" and that was just to fix a single program at a single company—and that company had "728 programs with a total of 46 million lines written in 27 programming languages."[975] As for what was riding on the work of Zavlyanova and her colleagues, it was nothing too serious, just "whether the lights and heat stay on in New Jersey come Jan. 1, 2000."[976]

With barely more than a year left until 2000, *The Times* assured its readers that "the direst situations that are predicted…are highly improbable" even though "it is not hard to find reputable alarmists."[977] And to the extent that those "direst situations" would not come to pass, that was thanks to the work of IT professionals like Zavlyanova. Granted, "the first wave of

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[972] Ibid.
[973] Barnaby J. Feder and Andrew Pollack. "Computers and Year 2000: A Race for Security (and Against Time)." *The New York Times*. December 27, 1998. A1, A22-A23.
[974] Ibid, A1.
[975] Ibid.
[976] Ibid.
[977] Ibid.

disruptions" had "already hit" with numerous companies in the US and Europe "experiencing at least minor breakdowns."[978] Thus, Y2K was not just some hypothetical future "what if?" it was a problem that was already occurring, thereby making it clear that the work needed to be done to head off more serious issues. Though Y2K remained an issue involving computers, *The Times* recognized that it was "also becoming a cultural phenomenon" that played into "a sense of unease that society is growing dependent on a lattice of technology that is now so far-reaching, interconnected and complex that no one completely understands it, not even the priesthood that writes its digital code."[979] Within that "priesthood" there were clearly some who were more concerned than others about what Y2K might mean, even as some experts noted "caution is in order, but not panic."[980] Still, stepping away from the "priesthood," *The Times* considered those who even if they were not quite "panicking" were certainly preparing—considering groups like the Casandra Project and God's Wilderness, the article positioned such groups as a sort of "throwback to the bomb-shelter mania of decades past."[981] And though the allusion to "bomb-shelter mania" framed such groups as over-reacting, *The Times* noted that the American Red Cross was advising people to make sure their gas tanks were full before January 1, 2000.[982] Yet despite all of the public paranoia, the work was being done, testing was being conducted, and amongst the experts the Y2K "alarmists" were becoming more and more of a minority.

"Y2K work isn't as easy as a lot of people think," this quote from Zavlyanova captures the general tone of "Computers and Year 2000: A Race for Security (and Against Time)," emphasizing the complexity of the work taking place while simultaneously making it clear to

[978] Ibid, A22.
[979] Ibid.
[980] Ibid.
[981] Ibid.
[982] Ibid.

readers that the work was being done.[983] *The Times* described the work as being "like asbestos removal" and noted "it is a job as tedious as replacing all the light bulbs in Las Vegas but not as easy,"[984] but the emphasis was squarely on the fact that the work was being done. Recognizing the growth of a Y2K alarmed sector of society, the article countered not by shrugging off those concerns but by placing these in juxtaposition with all of the experts highlighting that the repairs were on track—even as acknowledgement was still made of the fact that there were some experts who were still a bit more wary. Thus, with just over a year remaining, *The Times* presented an argument that things were on track, but that they needed to stay on track—the time had come to purchase a bottle of champagne, but there was still more than a year to go before it would be time to pop the cork. The cast of experts the article drew upon were figures who had appeared throughout much of *The Times'* other coverage of Y2K, including: Capers Jones, Edward Yardeni, Howard Rubin, Leon Kappelman, and figures associated with the Gartner Group. And the final words in the article were given to Peter de Jager, who was now predicting "the world will probably muddle through without the catastrophe he once foresaw," and Senator Robert Bennett who framed Y2K as a societal inflection point: "We cannot go back, because the infrastructure that undergirded our entire society 25 years ago has been dismantled."[985] Even as the article expressed growing concern amongst the ranks of the experts about the potential for international issues, the article presented an overall reassuring picture. As Senator Bennett noted, "Like it or not, we have no choice in this situation but to plow forward and, one way or the other,

[983] Ibid.
[984] Ibid.
[985] Ibid, A23.

make it work."[986] And as the efforts of people like Zavlyanova made clear, "one way or the other" people were making "it work."[987]

The tone set by "Computers and Year 2000: A Race for Security (and Against Time)," was to be the one that most of *The Times* coverage kept with throughout Y2K: a continued focus on Y2K, that placed ever more emphasis on experts predicting that everything would work out. And while the voice of the occasional "alarmist" was still heard, these were increasingly checked by optimistic experts, even as many of the alarmists were themselves framed as having become less dour. Throughout 1999, the focus steadily shifted away from the potential of particular industries or infrastructures failing, and towards areas that still had the experts worried. Thus, speaking of the status of the utilities industry, John Koskinen could state "our worst case scenarios appear not to involve anything that looks like a national failure;"[988] with this comfort leading him to a pivot (in a later article) to noting "As it becomes clear our national infrastructure will hold, overreaction becomes one of the biggest remaining problems."[989] Media outlets, as this chapter documents, had certainly played a role in alarming the public about Y2K, and in 1999 *The Times*' coverage sought to salve much of that concern. By April, *The Times* was echoing Koskinen's assurances that federal repair efforts were on track and his sense that when it came to the lingering issues, "We don't think it's a big problem,"[990] and throughout the same month the paper provided encouraging coverage of utilities, airlines, and banks that were all not

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[986] Ibid.
[987] Ibid.
[988] Matthew L. Wald. "Year 2000 Glitch Won't Be Disruptive, Utility Operators Say." *The New York Times*. January 12, 1999. A13.
[989] Barnaby J. Feder. "Fear of the Year 2000 Bug Is a Problem, Too." *The New York Times*. February 9, 1999. A1, C10. A1.
[990] Robert Pear. "92% of Federal Computers Ready for 2000." *The New York Times*. April 1, 1999. A20.

only reaching the testing stage, but passing the tests.[991] Concerns had not completely evaporated, though they had certainly shifted from earlier fears of widespread systemic failures—in particular concerns about lawsuits and international readiness were held up as areas of legitimate worry. Yet here too, by 1999, the coverage had become fairly unsensational. There was a fair amount of coverage surrounding Y2K legislation to limit the exposure of companies to lawsuits, but much of this coverage framed the issue less as a matter of Y2K preparedness and more as a case of Democrats and Republicans sparring over tort reform. And while lengthy pieces were devoted to the less than reassuring level of preparedness in China and Russia, in both of those international cases the coverage also noted "China is not nearly as dependent on computers as the United States,"[992] and "Russia does not depend on technology as much as the West, meaning that the damage could be limited."[993] And while, in November, *The Times* quoted a somewhat cautious Koskinen in response to Clinton's confidence "America is well on its way to being Y2K ready"[994] – the comment from Clinton was largely in keeping with what *The Times*' coverage conveyed.

Thus, with scarcely more than a month remaining, *The Times* placed on its frontpage the specific question of how ready New York City was for zero day.[995] Even given the level of confidence *The Times* had generally been projecting, uncertainty still lingered, on the one hand Y2K "could manifest itself almost anywhere, in ways small and large, because computers and

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[991] See: Barnaby J. Feder. "3 Industries Pass Tests for Year 2000 Computer Glitch." *The New York Times.* April 12, 1999. C2; Matthew L. Wald. "Air Traffic Control System Appears to Pass 2000 Test." *The New York Times.* April 12, 1999. A16; Anonymous. "Wall Street Passes Year 2000 Test." *The New York Times.* April 30, 1999. C20.
[992] Mark Landler. "When the Dragon Awakes…and Finds That It's Not 1999 Anymore." *The New York Times.* May 11, 1999. C1, C25.
[993] Michael Wines. "Lagging on Year 2000 Bug, Russia Starts Major Effort." *The New York Times.* June 23, 1999. A1, A8.
[994] Barnaby J. Feder. "Clinton Optimistic About Year 2000." *The New York Times.* November 1, 1999. A22.
[995] Andrew C. Revkin and Barnaby J. Feder. "Zero Day Near, New York Asks, 'What if?'" *The New York Times.* November 27, 1999. A1, B6.

microchips have become enmeshed in every aspect of urban life," but on the other hand "given how much repair work has been done" it was also quite possible that Y2K "could cause almost no trouble at all."[996] As the city's police commissioner, Howard Safir, explained it "You have to balance between panicking people and having people prepared," even as he expected "things will function as normal."[997] Regardless of what happened though, the City was going to be ready: it had truck mounted generators at the ready should power outages occur, food at the ready to be rushed to shelters, instead of being off with friends and family there were thousands of city employees who would be ready at their stations, and the city's emergency management "bunker" would be fully staffed to coordinate across all of the different agencies and response groups.[998] The assurances that the City was ready were couched in a recognition of how much repair work had been done, as "more than 65 million lines of computer programming code were inspected" and "more than 70 obsolete or fatally flawed computer systems were retired."[999] While the City was following the same general sort of low-key preparedness guidance that was being voiced by the federal government—have "basic items" on hand such as "nonperishable food," "flashlights," and "a first aid kit"—the overarching sentiment was that the problem had been handled, and those in positions of authority were keeping a watchful eye just in case.[1000]

Despite devoting a considerable amount of coverage to Y2K in the final month of 1999, *The Times* was predicting that the only fireworks that would occur as 1999 became 2000 were of the celebratory kind. And to the extent that *The Times* was not panicking this seemed to be mirroring and reifying a general sense "that Americans are confident computer glitches will not

[996] Ibid, A1.
[997] Ibid, B6.
[998] Ibid.
[999] Ibid.
[1000] Ibid.

have much impact on their lives."[1001] The apocalyptic fringe was still peopled with individuals heading for the hinterlands, but Koskinen seemed to be speaking for most of the experts when he said, "we're satisfied that the basic infrastructure in the United States that people depend upon is going to work."[1002] As concern increasingly shifted from a matter of what the computers would do, to the harder to predict question of what people would do, *The Times* maintained its focus on the underlying reality of the problem, "Had nothing been done, the world's financial systems would already be sagging from errors…with an almost certain collapse early next year."[1003] Nevertheless, *The Times* seemed to be echoing a certain level of Y2K fatigue amongst the public, one that often split along generational lines, and which by the final days of 1999 was well captured in a university student's comment "if I hear the phrase Y2K one more time I just might lose it."[1004] As the final hours of 1999 ticked past, an editorial noted "the most dire predictions…will not come to pass" while touting "extremely impressive" preparations that had taken place.[1005] And placing Y2K in a broader context, the editorial board considered that "Even those of us who have not filled the bathtub with emergency water, withdrawn extra cash from the bank and stocked up on food will be entering the new millennium sobered by the awareness that unknown problems of our own making are an enduring part of existence."[1006]

On the first day of the year 2000, *The Times* was already asking "Was the threat of technology failure overstated, or did spending hundreds of billions of dollars to fix things avert a

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[1001] Barnaby J. Feder. "Concern Over Year 2000 Remains Low in Surveys." *The New York Times.* December 13, 1999. C10.
[1002] Philip Shenon. "Public Lives: Washington's Man in the Middle of Millennium Madness." *The New York Times.* December 13, 1999. A16.
[1003] Barnaby J. Feder. "On the Year 2000 Front, Humans Are the Big Wild Cards." *The New York Times.* December 28, 1999. C1.
[1004] Matt Richtel. "Expecting a Whimper, but Preparing for a Bang." *The New York Times.* December 30, 1999. A16.
[1005] Editorial Board. "Watching for the Y2K Bug." *The New York Times.* December 30, 1999. A26.
[1006] Ibid.

catastrophe?"[1007] It was a question to which most of the experts consulted replied with an emphasis that the problem was real, and the expenditure worthwhile, as the government of the British government's millennium center put it, "Things don't go right by accident."[1008] And the paper's own editorial board voiced support for the seriousness of the problem, whilst justifying the paper's own coverage of the crisis, by referring to it as "a welcome anticlimax to two years of dire warnings."[1009] As the editorial further discussed "inaction was not an option for government and business leaders" and even if some of the "fear now seems exaggerated…it was not entirely fanciful."[1010] Some of the alarmists appeared chastened by the experience, even as some of the "doomsday hoarders" pondered what they would do with the extra canned goods they had purchased, even as there was a recognition that some disruptions had occurred. While many of the Y2K experts continued to advise vigilance, as Y2K issues could still pop up in the weeks ahead, the urge to move on was clear. And yet, in response to the growing sentiment that it had all been overblown, *The Times* quoted Celia Murray, a systems analyst from a New York State Agency that, "I think it could have been really bad, no question about it. A lot of people worked really hard. That's the reason people can sit here and say it's all overblown."[1011]

From its initial coverage in 1988, to its ominous coverage in 1997, to its reassuring coverage in 1999—*The New York Times* consistently approached Y2K as a subject warranting concern and attention as a range of qualified experts were treating it as a matter deserving of concern and attention. By recognizing and elevating authoritative voices surrounding Y2K, *The*

[1007] Barnaby J. Feder and Andrew C. Revkin. "Vast Efforts to Fix Computers Defended (and It's Not Over)." *The New York Times.* January 1, 2000. A1, A13. A1.
[1008] Ibid.
[1009] Editorial. "The Wisdom of Y2K Planning." *The New York Times.* January 3, 2000. A18.
[1010] Ibid.
[1011] Andrew Pollack. "For Year 2000 Fix-It Crew, New Tasks or No Jobs." *The New York Times.* January 3, 2000. A1, A16.

Times added its own legitimacy to these voices and the crisis by framing it as a matter worthy of attention. This did not prevent *The Times* from acknowledging dissenting voices, playfully poking fun at those it deemed as "alarmists," or dipping the occasional toe into the views of the apocalyptic fringe, but the overall shape of *The Times*' coverage of Y2K demonstrates the ways in which Y2K shifted from a story of a major technological challenge into a sort of feel good story about the ability of competent bureaucrats and responsible businesses to come together and address a genuine threat. What *The Times*' coverage of Y2K captures is not only the history of the crisis, but also a particular narrative of that crisis, wherein Y2K was a problem to be solved that was solved. As *The Times* editorial put it in its January 3, 2000 assessment "a reminder that problems of our own making can be addressed and prevented through sustained coordination is not a bad way to start a new millennium."[1012]

"A Few Serious Problems and Some Nasty Surprises"

In the waning days of 1999, President Clinton sought to assure Charlie Rose that "I—we've done a lot of work trying to protect computer systems."[1013] The interview, which was a part of an episode of *60 Minutes*, began with Rose raising the question of "what the century is going to be like" and as such it was only to be expected that the matter of Y2K would come up.[1014] When asked by Rose to "speak to Y2K" and to comment on his "concerns," Clinton retorted with a confident assessment of the work that had taken place under his

[1012] Editorial Board. "The Wisdom of Y2K Planning." A18.
[1013] *60 Minutes: Clinton on the Millennium (Countdown to 2000)*. Directed By Charlie Rose. New York, NY: Columbia Broadcasting System, 1999. Aired December 22, 1999.
[1014] Ibid.

administration.[1015] As Clinton put it "I think we've done a—a good job here. We've spent a lot of money. I say 'we,' the American people, not just the government, the private sector."[1016] Clinton projected a clear reassuring presence, noting "I feel a high level of confidence," commenting that the idea of flying around on a commercial airline on New Year's Eve or New Year's Day would not "bother me a bit," and stated clearly "I think our systems are in order here."[1017] Granted, in his comment the "here" was not without significance, as Clinton did balance his optimistic outlook with concern "for some of our friends around the world that have more rudimentary computer networks."[1018] Considering the potential for problems in other countries, Clinton noted that he was worried about "practical problems" such as power failures or financial issues, but these were concerns about other countries not the US.[1019] And Rose did not press Clinton further on the matter, pivoting into questions about what the world might look like in 2050.[1020]

With just over a week remaining until the clock struck 2000, the *60 Minutes'* interview of President Clinton presented a calming conclusion to the news program's previous coverage of Y2K. And while its previous coverage had never wallowed in doom and gloom, the figures spoken to in *60 Minutes*' earlier Y2K segments had not featured the same straightforward confidence that Clinton was projecting. And though President Clinton certainly spoke with an authoritative voice, earlier segments had spent their time presenting the voices and opinions of the people actually in the trenches of Y2K dealing with the problem directly.

[1015] Ibid.
[1016] Ibid.
[1017] Ibid.
[1018] Ibid.
[1019] Ibid.
[1020] Ibid.

On the November 29, 1998 broadcast, Steve Kroft began his segment by informing viewers of "the year 2000 computer glitch" which "threatens to crash the world's computer networks."[1021] And though Kroft acknowledged that there were some who viewed the whole matter as nothing more than hype, Kroft countered that it was unlikely that businesses and the government would be spending billions of dollars to fix something that did not exist. And despite all of the money being spent, Kroft warned that "officials concede we're probably in for a few serious problems and some nasty surprises."[1022] As for what those problems might look like, as the screen displayed the corresponding images, Kroft went down a list of the many aspects of daily life that had become bound up with the basic functioning of computers. As Kroft put it, "over the last 50 years, without even realizing it, we have surrendered much of our lives to computers."[1023]

In response to Kroft's query as to the seriousness of the matter John Koskinen replied with a simple "it's a major problem."[1024] Yet more significant than Koskinen's comment, was the way in which Kroft described Koskinen, he "is not some wild-eyed prophet of computer doom, he's the man President Clinton has appointed to manage the Y2K crisis for the federal government."[1025] According to Kroft, Koskinen was balancing two concerns: "that exaggerated Y2K fears could cause panic" and on the flipside that a lack of adequate concern about Y2K might lead people and businesses to fail to properly prepare.[1026] In Koskinen's estimation, enterprises that were choosing to ignore the problem were "rolling the dice" on the future of their

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[1021] *60 Minutes: Y2K* (1998). Directed by Steve Kroft. New York, NY: Columbia Broadcasting System, 1998. Aired November 29, 1998.
[1022] Ibid.
[1023] Ibid.
[1024] Ibid.
[1025] Ibid.
[1026] Ibid.

businesses.[1027] To put Koskinen's economic warnings in sharper relief, Kroft moved on to speaking with Edward Yardeni, Chief Economist at Deutsche Bank Securities, who predicted "a 70% chance that Y2K is going to plunge the world into a global recession."[1028] As Yardeni made clear, the problem was fairly "trivial" on the level of any single computer, but when considered in terms of the sheer scale of computers out there the problem quickly became overwhelming. And to drive this point home for viewers, Kroft noted that "there are 100 million interconnected computers around the world" and these computers, as well as the "tens of billions of microprocessors" out there are essential for everything from microwaves to Medicaid.[1029]

Luckily, despite the portentous comments from Koskinen and Yardeni, work was being done to address the problem. And Kroft made this clear by paying a visit to Capgemini, one of the companies literally doing the work. In a room filled with people staring at computer monitors, Kroft leaned over the shoulder of one Capgemini employee diligently at work, alongside a voice over comment that "to understand exactly what they're doing, you have to be one."[1030] While Kroft assumed the character of the outsider, baffled by the technical details being explained to him by the Capgemini employees, he noted the key points that the work "tedious and time consuming" and that the work required a great deal of slow methodical attention.[1031] Based on their conversation, Kroft noted that Capgemini reported going through "100,000 lines of programming to find about 200 that needed to be changed" and that was for "just one program out of 105 submitted by one bank."[1032] There was clearly a reason why, as Deputy Defense

[1027] Ibid.
[1028] Ibid.
[1029] Ibid.
[1030] Ibid.
[1031] Ibid.
[1032] Ibid.

Secretary John Hamre testified (in a clip from a hearing that was included in the broadcast) "the year 2000 problem is an electronic equivalent of El Niño."[1033]

Even as some technical experts were hard at work staring at their computer screens, Koskinen drew attention to at least one former computer programmer: Scott Olmstead who "bought a place in the California desert" as a way of preparing "for the worst."[1034] And though Kroft acknowledged that Olmstead was not alone in taking such dramatic action, beyond some visuals of Olmstead's desert domicile, little sustained attention was put on those in the throes of "millennial panic."[1035] If the workers at Capgemini represented one sort of response, and Olmstead represented another, than Bill Shawn presented yet another stance from within the technical community—Kroft called Shawn a "Paul Revere of Y2K," as he had been warning about Y2K (and trying to capitalize on fixing it) as early as 1984. Shawn was not subtle in his assessment of the problem, stating "if they ever have a stupidity hall of fame for mankind, this is gonna be the number one exhibit."[1036] For there had been plenty of time to fix Y2K, but now that time was running out. And though Shawn's original Y2K remediation business had been too ahead of its time to succeed, now Shawn was offering his service as an expert witness for Y2K related lawsuits.

Having spoken to so many IT professionals and experts, Kroft closed out the episode by turning to the head of the computer science laboratory at MIT, Michael Dertouzos, who carefully noted that while he did not think it was "going to be the catastrophe that the panic creating people are talking about" he added that "the problem deep down is that nobody really

[1033] Ibid.
[1034] Ibid.
[1035] Ibid.
[1036] Ibid.

knows."[1037] As Dertouzos argued, the problem was not really about computers, it was about human error. After all, "we as humans are fallible and we're not omniscient and we can't anticipate everything. So every now and then we blow it."[1038] And after those less than reassuring closing comments, Kroft informed viewers that if they were curious what all of this meant for their home computers that they would need to check with their computer's manufacturer and their software providers.[1039]

Roughly six months later, Kroft was once more speaking to *60 Minutes*' viewers about Y2K. And if some, at the time of the previous story "still thought it was a joke," Kroft emphasized that the corporations and public entities spending a billions to fix the problem certainly were not laughing.[1040] As Kroft explained the Federal Government was "comparing Y2K to a huge natural disaster, like an earthquake, a hurricane, or a tornado that disrupts peoples' lives for days, weeks or maybe even months."[1041] What's more, it increasingly seemed like local governments might be particularly at risk, and as Kroft emphasized (with accompanying images playing out on the screen) this could impact everything from waterworks, to 911 emergency calls, to welfare checks, to traffic lights.[1042]

Kroft drove home the seriousness of this problem by devoting much of the segment to a conversation with Mary Ellen Hanley, who had been hired by the District of Columbia to oversee its Y2K remediation efforts.[1043] As Hanley made clear, when she came on to the job she quickly realized that the situation was worse than she had even expected, as there was not even a

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[1037] Ibid.
[1038] Ibid.
[1039] Ibid.
[1040] *60 Minutes: Y2K* (1999). Directed by Steve Kroft. New York, NY: Columbia Broadcasting System, 1999. Aired May 5, 1999.
[1041] Ibid.
[1042] Ibid.
[1043] Ibid.

comprehensive list of computers and software in use across the district's 68 agencies. Faced with the size of the problem, Hanley admitted that "contingency" was "a prudent methodology," noting that "if it had to be manual, we would have to develop a way to do that."[1044] And to counter any naysayers who might still be treating the entire Y2K affair as much ado about nothing, Hanley informed Kroft that they had encountered some failures in the process of their remediation work. Including some payroll related issues ("a subject very close to all our hearts who work here in the District").[1045] Though Hanley informed Kroft that the problem had been fixed and returned to operation, she also informed him that it had taken close to 60 days to fix it.[1046]

Next door to DC was Montgomery County, Maryland which Kroft described as "the best prepared local government in the country for Y2K problems"—a county that had been working on these issues for more than four years, spending more than $40 million on "fixes and replacements."[1047] That money had been spent inventorying and checking all of the county's equipment, but on the first business day of 1999 "the computer that handles building permits crashed" as it was not able to "handle expiration dates in the year 2000," and alas "that wasn't the only problem."[1048] And if these were the sorts of problems happening in "the best-prepared" local government, than surely this did not bode well for DC…or by extension for whatever county it was from which the viewer was watching. As Senator Robert Bennett, chair of the Senate's Special Committee on Y2k noted, should municipalities be unable to "distribute welfare checks" or if there was "disruption in the food supply" it could even "create some civil

[1044] Ibid.
[1045] Ibid.
[1046] Ibid.
[1047] Ibid.
[1048] Ibid.

unrest."[1049] And rather than offer concrete comfort, Bennett state "the dire predictions will probably be fulfilled but on a sporadic basis, place by place."[1050]

In a provocative move, Kroft presented Hanley with some "advice" that had been given about Y2K, namely "You can do the marauder approach and move to the mountains and take everyone with you, including your mother-in-law, and hole up for a year. Or you can buy four weeks' worth of water, put $100 in your pocket and make sure you're safe in your own home."[1051] And the source of that quote was, of course, none other than Hanley herself.[1052] And though she noted she had gotten into a bit of trouble for that quote, she stood by it, noting "I think it's wise to prepare." As Kroft noted in closing, DC had been given $61 million for its Y2K work, and the district's government was now seeking an additional $50 million to finish the job.[1053]

With its coverage of Y2K, *60 Minutes* encountered one of the major obstacles of dramatizing the software crisis for viewers: that showing a room full of people staring at computer screens simply is not that exciting. Had Kroft not been informing his viewers of what he was bearing witness to during his visit to Capgemini, it would have been hard for many viewers to have any idea of what the computer professionals were staring at on their screens. And while matching the references to important systems at risk to visuals of those systems helped create clear important parallels, the fact remained that even as the *60 Minutes* segments reported on various failures that had occurred, it did not have a striking visual of a Y2K caused calamity. Granted, the segments were not engaged in doom-mongering, and to the extent that the

[1049] Ibid.
[1050] Ibid.
[1051] Ibid.
[1052] Ibid.
[1053] Ibid.

more apocalyptically minded were even mentioned it was largely in passing (and without giving them an opportunity to speak). Rather, the *60 Minutes* segments made sure to carefully couch the comments that Kroft was encountering in reference to recognized experts. These were figures in positions of authority by dint of their professional qualifications, academic pedigree, or due to their placement in the government. An amiable interviewer, Kroft did not seek to caricature or belittle those he spoke with, instead framing himself as a receptive outsider willing to listen to what the experts were saying. And though Kroft's segments assured viewers that the experts did not think the world was going to end, they also suggested that there were worse things in the world than having some extra food and water on hand.

"I'm So Sick of Y2K"

If a movie begins with one character mockingly saying to another "Still think the sky is falling?" it is fairly safe to assume that it will not be very long before something winds up falling out of the sky. [1054] At first, everything seemed fine and the airplane was coming in for a normal landing, then suddenly a total blackout shrouds the entire city (and the landing strip) in darkness, then the plane's own computers started to go haywire, and then the plane goes down. From "still think the sky is falling?" to "we lost em" in under five minutes. Luckily, this sequence of events was not playing out in the real world, but in the opening scene of *Y2K: The Movie*, which aired on November 21, 1999.[1055] And luckily for the characters in the film, the crash that begins the film is only a simulation. Though it is also an ominous sign of things to come.

[1054] Dick Lowry, dir. *Y2K: The Movie.* 1999; NBC Studios.
[1055] Ibid.

The day is December 30, 1999, and as Nick Cromwell (Ken Olin) and Martin Lowell (Joe Morton) leave the failed airplane simulation, Nick tells Martin that it will be necessary to ground all commercial aviation. A suggestion at which Martin balks, even as the simulation they are leaving demonstrates that problems remain, even if time does not. Nick and Martin are both members of the government's team working on Y2K, Nick is a computer analyst and Martin is his manager—with Nick providing the unvarnished view of the worst-case scenarios, while Martin remains aware that it is not so easy to do the things Nick is suggesting. Nevertheless, if anything does go wrong, Nick and Martin will be watching for it, as they will be spending New Year's Eve in a computer filled command center in Washington D.C., alongside the rest of their team of government bureaucrats, uniform wearing military personnel, and assorted computer geeks.[1056]

Granted, not everyone is planning on spending their New Year's Eve making sure the computers are still working. Though those with more traditional New Year's plans, elsewhere in the country, are finding plenty of Y2K related warning signs of their own. In New York City a young man trying to withdraw some extra cash "just in case," finds long lines at a crowded bank. Meanwhile, on the other side of the country Nick's family discovers the supermarket to be closed as a result of a sudden surge in panic buying, which has resulted in a less than celebratory mood. To the extent that Y2K has taken over Nick's life, it is clear that it has had a similar impact on his family, his wife Alix (Kate Vernon) is a doctor who will be on call for New Year's Eve, and thus they have recruited Nick's father to babysit their children (including their teenage daughter) on the night in question. While Nick's father is informed by his survivalist neighbor that "tomorrow we could all be living in the dark ages," Nick is hardly a font of optimism himself,

[1056] Ibid.

and he urges Alix to keep their kids with her at the hospital—Nick hopes that nothing bad will happen, but he is a fact driven computer analyst, and he knows better than to rely on hope.[1057]

Those assembled at the command center are as ready as they're going to be, and as the team recites their preparedness and contingency plans, a skeptical comment is met with an earnest retort of "everybody here has been working on Y2K for two years." But for Nick, Martin, and the rest of the team, the moment of truth had arrived. Staring at a large, computerized map of the world, those at the command center anxiously watched as the world began entering the year 2000. And when the Marshall Islands crosses over into 2000, a plane does fall from the sky—an F-18 that was in the air loses control and crashes with a fiery explosion. After this, things start going wrong quickly. Those in the command center look on in horror as more and more problems pop up on their big board, as they wait for the United States to enter into the year 2000. There are failures and outages across Asia and Europe, and while a cascading power failure is luckily averted in France, any relief swiftly turns to horror as Y2K results in a major nuclear reactor failure in Sweden.[1058]

While Nick and his team in DC are scrambling, the crowds in Times Square are excitedly cheering on the countdown, though their cheers of "happy new year" are quickly replaced by cries of terror when the city is suddenly plunged into darkness (disrupting the proposal plans of the young man who had earlier encountered long lines at the bank). Cascading power failures are snarling the Northeastern US, which even causes the DC command center to briefly lose power, even as Nick and his team rush to try to figure out what went wrong at the power plant in Sweden. And in the process of figuring out what went wrong there, they realize that a plant of a

[1057] Ibid.
[1058] Ibid.

similar design is in operation just outside of Seattle (home to Nick's family). Thus, with some members of his team along for the ride, Nick rushes off to fix the plant and save his family—even as more Y2K related issues continue sweeping the nation (including a failure in a hospital machine that Alix is able to catch thanks to her being on the lookout for Y2K failures). Nick and his team eventually arrive at the power plant in Seattle—helping avert a plane crash that was the "real" version of the test from the film's start, en route—only to discover that it is on the brink of meltdown, an event which would doom Seattle (including Nick's family). Racing against time, Nick's team applies all of their high-tech knowhow (as well as some physical endurance) to save the plant before it can meltdown.[1059]

The film ends with Nick being reunited with his family at the hospital where Alix works. And when Alix asks "So what the hell happened out there?" An exhausted Nick replies, "not much, couple of computers crashed, that's about it." Though any attempt to end on a clean "happily ever after" is overshadowed by a reminder of rippling blackouts and other issues still plaguing the world.[1060]

Early in the film, Nick and Alix's teenage daughter gives voice to the exasperated sentiment "I'm so sick of Y2K!" a feeling, which by the time *Y2K: The Movie* aired, was quite possibly shared by a not inconsiderable number of viewers. And though *Y2K* was clearly hoping that people were not "so sick of Y2K" as to not want to tune in for the movie, the film was still clearly banking on enough people being aware of Y2K as to have their curiosity piqued by a dramatization of what might happen. While news coverage of Y2K frequently walked the narrow path between highlighting worst-case scenarios alongside reassuring comments from

[1059] Ibid.
[1060] Ibid.

knowledgeable experts that the worst-case scenarios were extremely unlikely, *Y2K* could not strike such a balance as its plot required it to decide and then dramatize a particular set of outcomes. And while *Y2K* does not lean fully into the worst of the all-out-worst case scenarios, the situations it depicts are far from mild snafus. In some respects, *Y2K* attempts to have it both ways: on the one hand it shows a team of government experts who have been working on the problem for years, who are standing by to watch if anything goes wrong, and who are led by the savvy Nick Cromwell who is willing to throw himself into all sorts of physical danger to save the day; on the other hand Nick's warnings are not sufficiently heeded, the two years of preparatory effort prove to be insufficient, rolling blackouts snarl many areas, and even if the nuclear powerplant in Seattle is prevented from melting down the fact that nuclear powerplant in Sweden does meltdown is far from reassuring. *Y2K: The Movie* does not end with the collapse of civilization, but neither does it suggest that everything will be okay.

Even before *Y2K: The Movie* could air, there were some expressing concern about the impact the made-for-tv-movie might have on a public that had already been whipped into an anxious fervor about Y2K. As John Castagna, a spokesman for the electric power industry trade group Edison Electric Institute told *Computerworld*, "A movie that exacerbates fears or plays to people's darker side will result in lots of money being spent by industries just protecting themselves."[1061] Indeed, the Edison Electric Institute had gone as far as writing to NBC affiliates to ask them not to air the film.[1062] And Castagna was not alone in worrying that the film's depiction of power failures could lead to a surge of anxious customers contacting their power

[1061] Kathleen Melymuka. "It's Only a Movie, But *Y2K* Raises Real Concerns." *Computerworld* 33, Iss. 46 (November 15, 1999): 4.
[1062] Andrew Pollack. "Hollywood Filmmakers Pass on the Year 2000 Peril." *The New York Times*. November 21, 1999. Sec 1, 24.

providers with worried questions. Indeed, Mickey Galatola of Philadelphia's PECO Energy Co. noted that PECO had "decided to be staffed up for after the *Y2K* movie" so as to be best able to handle an anticipated influx of worried calls.[1063] These concerns were not limited to the electric industry, representatives of the National Governors' Association as well as the Food and Drug Administration contacted NBC to express concern, and seemingly in response to the movie an assortment of "government and industry officials released a burst of information…to show that the nation is apparently prepared and calm."[1064] Still others, such as John Hall of the American Bankers Association, hoped the film would be an opportunity to further educate viewers, as the film could lead into nightly news segments that would correct some of the film's excesses.[1065] While in Chicago, a representative of the mayor's office had arranged to work with the local NBC affiliate to appear in a tie-in that would air after the film to reassure viewers that what they had seen was just fiction.[1066] And several weeks before the movie aired it was mentioned at the House of Representative's final Y2K hearing of 1999, at which Representative Barcia expressed concern regarding "the level of public fear" and described *Y2K: The Movie* as "the single largest public awareness announcement."[1067] Describing the disruptions and destruction that would be depicted in the film, Barcia warned, "In the absence of facts, what is designed to be entertainment could achieve the saddest effect."[1068] These anxieties were not enough to keep the film from airing; however, viewers in some markets may have seen the disclaimer "The

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[1063] Melymuka. "It's Only a Movie, But *Y2K* Raises Real Concerns." *Computerworld*. 4.
[1064] Pollack. "Hollywood Filmmakers Pass on the Year 2000 Peril." Sec. 1, 24.
[1065] Ibid.
[1066] Ibid.
[1067] U.S. Congress. House of Representatives. Subcommittee on Technology of the Committee on Science and the Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform. *Y2K Myths and Realities.* 106th Cong., 1st sess., November 4, 1999. 7.
[1068] Ibid.

characters and situations depicted in the movie Y2K are not based on fact. This program does not imply that any of these events could actually occur."

Despite these anxious warnings about *Y2K*, when the movie actually aired the response to it was decidedly lackluster. Had the film been a true edge-of-your-seat thrill ride that would be hailed as one of the best disaster films of the decade there was a chance that its Y2K warnings could shift public perception of the crisis in a worrisome direction; yet the responses the film garnered suggest that its greatest sin was not that it was sensational, but that it was ultimately rather boring. *Wired* minced few words, stating "it's not any good," referring to it as "a rather pedestrian action movie," and noting that "the most interesting thing about *Y2K* might be the buzz."[1069] Shortly after having documented the outcry against the film, *Computerworld* playfully stated "There are some, um, inaccuracies in the film," noted the film "entirely misses the big picture," and quoted the "Y2K expert Leon Kappelman" as saying the film "trivializes the whole problem."[1070] While Mitch Ratcliffe, writing at ZDNet offered a lengthy debunking of the film that castigated 26 "myths" over the course of the film.[1071] Though noting that "the problem with the film is its central theme—what if everything predicted by Y2K doomers come true?" Ratcliffe concluded his barbed takedown by noting that the movie "shouldn't cause any panic, because it was so indescribably silly."[1072] Yet even as *Y2K: The Movie* was met mainly with scoffs, some of the responses to it still captured the leeriness of Y2K experts. *Computerworld* jokingly titled its review of the movie "A Millennium Disaster" and yet in asking "Y2K Experts"

[1069] Declan McCullagh. "A True Y2K Disaster: The Movie." *Wired*. November 20, 1999. https://www.wired.com/1999/11/a-true-y2k-disaster-the-movie/
[1070] Matthew Schwartz. "A Millennium Disaster: NBC's *Y2K: The Movie*." *Computerworld* 33, Iss. 47 (November 22, 1999): 38.
[1071] Mitch Ratcliffe. "Y2K: The Movie, reviewed and debunked." *ZDNet.* November 21, 1999. https://www.zdnet.com/article/y2k-the-movie-reviewed-and-debunked/
[1072] Ibid.

Ian Hayes and Leon Kappelman for their assessments of "Fact or Fiction?" in the film, the experts did note that some, though importantly not all, of the problems depicted in the film were "possible."[1073]

Y2K: The Movie is unlikely to ever appear on lists of the greatest disaster movies of all time, and the film has not achieved anything resembling "cult" status either. Nevertheless, at least for the purposes of this assessment, what makes *Y2K* significant is that it is a disaster film in which the core disastrous occurrence is the Y2K software crisis. And furthermore, that the very existence of the film—as well as the anxiety it sparked even before it airs—powerfully suggests that Y2K had achieved a sufficient level of cultural cache as to be worthy fodder for a made-for-tv-movie. While *Y2K: The Movie* has the honor of being the only movie entirely focused on Y2K, it is not the only film released in the late 1990s to feature Y2K as a major plot point. The action thriller *Terminal Countdown* uses the threat of Y2K activating a secret US nuclear missile installation as the impetus for its race against time narrative.[1074] The heist movie *Entrapment* (which starred Catherine Zeta Jones and Sean Connery), featured clever criminals scheming to use the chaos resulting from the switchover as the moment in which to stage their daring heist.[1075] And though it hardly ranks as a major plot point, in Mike Judge's *Office Space* the dissatisfied Initech computer programmer Peter mentions that he is working on "the year 2000 problem."[1076]

There was certainly no shortage of disaster movies in the 1990s—indeed 1998 saw dueling meteor movies with *Armageddon* and *Deep Impact*—but nevertheless, as *Newsweek* put

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[1073] Schwartz. "A Millennium Disaster: NBC's *Y2K: The Movie*." 38. The article includes a "Fact or Fiction?" sidebar where Ian Hayes and Leon Kappelman respond to some of the film's particular occurrences.
[1074] Richard Pepin, dir. *Terminal Countdown.* 2000. PM Entertainment Group.
[1075] Jon Amiel, dir. *Entrapment.* 1999; Twentieth Century Fox.
[1076] Mike Judge, dir. *Office Space*. 1999; Twentieth Century Fox.

it, "the millennium is a made-to-order Hollywood moment."[1077] Anticipating a potential flux, which never truly materialized, of movies aiming to cash in on Y2K, *Newsweek* noted "as a plot device, well, it's now part of the Zeitgeist," and quoted the actor Chris O'Donnell (fresh off playing Robin in *Batman Forever* and *Batman and Robin*) as saying "I read all this stuff about the computer glitch and I thought, 'Wow, this is big stuff.' And the more research we did, the more facts we learned about what could happen, wow, we loved it. It's a ticking clock."[1078] Though the Y2K film to which O'Donnell was attached as the hero, failed to actually materialize.[1079] While "Hollywood and the television networks," at least in *The New York Times'* estimation were "not above preying on public fears to make a buck" when it came to "the case of Year 2000, what is remarkable is how little the entertainment industry has exploited what would seem to be the ultimate race-against-time plot line."[1080] When it came to Y2K, Hollywood seemed to have the sentiment that the window for capitalizing on the crisis was a rather small one, as Jon Amiel (the director of *Entrapment*) described his expectations of Y2K "I think it will be a bit of a damp squid, a bit of a bust, in reality," and thus his Y2K related film needed to get to theaters before actual events could prove him right.[1081] Though "a meteor collision will always be a possibility," Y2K was the sort of problem with a definite shelf life, and as an unnamed "senior executive at one studio" told the *New York Times* "Do you really want to spend a lot of money on what on Jan. 2 is going to be a dated movie?"[1082] Perusing the almost vanishingly

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[1077] Corie Brown. "Searching for a Plot, Hollywood looks to the Millennium." *Newsweek* 131, No. 26 (June 29, 1998): 14.
[1078] Ibid.
[1079] Ibid.
[1080] Andrew Pollack. "Hollywood Filmmakers Pass on the Year 2000 Peril." *The New York Times*. November 21, 1999. Sec. 1, 24.
[1081] Brown. "Searching for a Plot, Hollywood looks to the Millennium." 14.
[1082] Pollack. "Hollywood Filmmakers Pass on the Year 2000 Peril." Section 1, Pg. 24.

short list of Y2K movies released by Hollywood clearly answers that question with a resounding "no."

Speaking about *Y2K: The Movie*, David Israel (the film's executive producer) stated "none of us said any of this is definitely going to happen, but no one's saying it's not going to happen either."[1083] And while that sentiment can seem like a producer dodging responsibility for playing on the public's paranoia for the sake of ratings, *Y2K: The Movie* might have been capitalizing on and exacerbating Y2K anxieties, but as *The New York Times* acknowledged, "the movie would have no tension if it were not based on events that Year 2000 experts have at least worried about."[1084]

Conclusion

"Soon the turn of the millennium will come and go, and historians of technology will look back at the year 2000 computer problem—the Y2K 'crisis,' as this newspaper and many others now call it. They will draw from it a salutary lesson: we are a silly species, easily confused and given to sudden fits of hysteria," at least this was the prediction that James Gleick was making in *The New York Times* on January 24, 1999.[1085] Without denying the technical problems underlying Y2K, Gleick suggested that the whole affair was being blown hugely out of proportion, hence his putting the term "crisis" in quotation marks. After all, at least to Gleick it seemed as though there had been more political and media focus on Y2K than there had been on "AIDS and global warming combined" which unlike Y2K represented "crises that actually do

[1083] Ibid.
[1084] Ibid.
[1085] James Gleick. "Fast Forward; Doomsday Machines." *The New York Times Magazine.* January 24, 1999. 16.

kill people and threaten the health of the planet."[1086] Gleick emphasized "we humans always fret about the end of the world when the calendar reaches a big round number" and acknowledged that "we're already anxious about computers, and rightly so," but nevertheless his basic advice to readers was that "the amount of time that you, a dutiful citizen of the modern world, should spend worrying about Y2K is zero."[1087]

While the playful tone was consistent with Gleick's other columns, the content itself represented a rather interesting shift. True, Gleick had started by noting "prophets of doom come out of the woodwork at the end of the millennium," but when he had first written about Y2K for *The New York Times* on June 2, 1996 he had not been so quick to describe Y2K as being worth "zero" worry.[1088] After all, as he had explained in that 1996 column, some of the problems that Y2K could cause might include issues with "the compounding debt on your latest credit-card bill" and "the validity of your driver's license, health insurance or latest paycheck" – all matters that seemed like they could be of some very justified concern to "a dutiful citizen of the modern world."[1089] And though Gleick directed a somewhat furrowed brow towards the early cost estimates of The Gartner Group—"the number are soft and the rhetoric is Chicken Little-ish"—Gleick still supplied the quote "The apocalyptic language that you hear? Believe it." a quote which came from Captain Don Brown who was the Air Force's Year 2000 team leader.[1090]

Writing in June of 1996, Gleick noted "a vast gulf still divides the people who write code from the people whose companies live or die by that code,"[1091] but at the end of January 1999 Gleick was assuring the readers he had initially disturbed that "almost everyone and everything

[1086] Ibid.
[1087] Ibid.
[1088] James Gleick. "Fast Forward; Oh-Oh." *The New York Times Magazine*. June 2, 1996. 19.
[1089] Ibid.
[1090] Ibid.
[1091] Ibid.

is Y2K-compliant already."[1092] And if a "dutiful citizen of the modern world" wanted to truly understand how Gleick's perspective had shifted all they would have needed to do was look at the rest of the coverage of Y2K in *The New York Times* between those two articles. For there they would have seen the shift from early concern, to calmer reassurances gradually playing out, even if (contrary to Gleick's assertions) *The Times*' coverage throughout 1999 was not wholly in keeping with the sentiment that Y2K was not worthy of concern.

The contrast between those columns by Gleick represents one of the most important aspects of the ways in which media outlets covered Y2K, namely: the importance of time. On the one hand, this is certainly a banal observation, seeing as all media analysis is going to be time-dependent, yet in the case of a swiftly developing crisis such as Y2K this point must still be emphasized. And this is especially important to bear in mind when assessing the overall character of the coverage, and also when trying to contrast the coverage between various media outlets. Put somewhat differently, as this chapter has explored, there is a significant difference between the treatment of Y2K by Newsweek's cover story and by Time Magazine's cover story—yet in juxtaposing the two it is essential to recognize the amount of time that separates the two cover stories, and the amount of work that transpired between the publication of those cover stories. Y2K is the story of a crisis that played out over many years, and each individual artifact from that crisis needs to be placed into a broader temporal narrative to properly contextualize it. In June of 1997 it was fair of *Newsweek* to highlight that the experts were concerned about whether or not everything would be fixed in time, and by January of 1999 it was fair of *Time Magazine* (and Gleick writing at *The New York Times*) to note that the experts were feeling significantly more optimistic; however, it is essential not to ignore the fact that a great deal of

[1092] Gleick. "Fast Forward; Doomsday Machines." 16.

work took place in 1998. To the extent that coverage such as the *Newsweek* cover helped sound the alarm on Y2K, it helped create the awareness and pressure that resulted in much of the work that could then allow *Time* to treat the crisis as one that had been largely addressed. Indeed, what makes *Y2K: The Movie* truly stand out, and what likely lessened its impact, is that by the time it came out the level of concern in the movie was already passe. Had *Y2K: The Movie* made it to screens in November of 1997 it might have more successfully tapped into the real uncertainties that surrounded Y2K at that point, but by 1999 it was not only that people were sick of hearing about Y2K, it was also that they were being inundated with messages that they did not need to worry about Y2K.

This in turn represents another significant aspect of the media coverage of Y2K, wherein the media was simultaneously involved in driving public anxiety, and then turning around to mock the excesses of that public anxiety. While most mainstream media coverage was careful to draw on the opinions of experts who stated time and time again that the sky would not fall, those same media outlets had a tendency to report on those preparing for the sky to fall. Some of this doubtless has to do with the desire to tell a captivating story, as those stocking up on food are more compelling characters than programmers dutifully tapping away at their keyboards. Furthermore, there is a clear aspect here of wanting to inform readers as to the correct way to prepare: do not stock up on shotguns and head for the hinterlands (that is what these ridiculous people are doing); however, be aware that the Red Cross is advising people to prepare as if a bad storm was coming, so you might want to buy some extra bottled water and make sure to put fresh batteries in your flashlight. Thus, the media could have its impending apocalypse to excitedly report on, while simultaneously assuring readers that it would not really be that bad. And beneath much of this could be detected a quiet acknowledgement about the ways in which Y2K made

clear that something fundamental had changed as societies had come to be so heavily reliant on computers and computerized systems.

After all, nuclear power plants really did have Y2K related issues that needed to be addressed if 99 was to seamlessly roll over to 00. Luckily, that work was not entirely dependent on the efforts of Homer Simpson.

Chapter Five: Joseph and Cassandra—Prophesizing Doom and Prophesizing Preparation

"Atlantis may have been the most advanced civilization on earth. However, because its technological innovations were too advanced for it [sic] citizen's judgment, they ended up destroying themselves."[1093] Stripped completely of contextual information, those words seem as though they would be at home in a work of science fiction, a rumination on mythology, or in a strange work of conspiratorial revisionism. Yet, the author of those words was not as interested in fantasizing about the past, as they were instead committed to drawing upon the fate of Atlantis in order to deliver a warning to the present. As they put it, "This year 2000 (Y2K) problem reminds us of the fate of Atlantis. Have our own rapid technological innovations outpaced our ability to control and foresee their ultimate consequences?"[1094]

That question, alongside the invocations of Atlantis, appeared in the foreword to one of the many Y2K survival guides that appeared in the waning years of the 1990s. The reference to a lost civilization, and the fact that the book in which the foreword appeared was titled *Y2K Family Survival Guide*, may have struck some as rather silly, fairly hyperbolic, and thoroughly illogical. Yet, despite the allusions to Atlantis, the foreword seemed fairly optimistic that those living at the end of the twentieth century would not share the same fate as their ancestors in Atlantis. While fixing Y2K represented a "gargantuan task," and one which societies had been slow to address, the foreword writer nevertheless assured readers that "it is now being addressed with fervor."[1095] Granted, that comment was not meant to encourage apathy, this was appearing in the

[1093] Leonard Nimoy. "Foreword." In Avian M. Rogers. *Y2K Family Survival Guide*. (Nashville: Rutledge Hill Press, 1999). vii.
[1094] Ibid.
[1095] Ibid, viii.

foreword to a survival guide after all. Considering that "nothing like this has ever occurred before," and that therefore "No one know exactly what is going to happen" the foreword continued "It is important for you to find a reasonable balance between those who call for extreme survival measures and those who advise no action at all."[1096] Rather than a call for building isolated bunkers in the hinterland, the foreword noted "The best we can do is work together."[1097]

While the rest of the *Y2K Family Survival Guide* would provide plenty of information regarding food, water, power, hygiene, and much else for those aiming to achieve that "reasonable balance," the foreword writer closed out their introductory section with an attempt to think through the deeper implications of Y2K. Not simply what Y2K threatened, but what Y2K truly revealed. Rather than blame Y2K on corner-cutting computer programmers, the foreword noted "we are all responsible for the Y2K problem" for "We have all benefited from the technologies that improve our lives."[1098] In the estimation of the foreword writer, Y2K was certainly a genuine technical problem that needed to be solved, but there could be more to it, "Let us use the Y2K problem as an opportunity to reflect on where we are headed as a civilization."[1099] And as the opening comments on Atlantis suggested, the "where we are headed" had the potential to be towards disaster.

But what bizarre figure was penning this foreword? What illogical fool was bringing up Atlantis? In actuality, the foreword came from a figure who was renowned for his emotionless response to serious peril, and his unflinching logical assessments, namely: Spock. Or, more

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[1096] Ibid, viii-ix.
[1097] Ibid, ix.
[1098] Ibid.
[1099] Ibid.

accurately, Leonard Nimoy, the actor who had played Spock on the original Star Trek series. And, though he said far more about Atlantis than he did about the starship Enterprise, he still closed out the foreword with the Vulcan greeting he had made famous: "Live long and prosper."[1100]

The *Y2K Family Survival Guide* to which Nimoy contributed the foreword was hardly the only work of its type to appear in the years surrounding the year 2000 computing crisis. And though it stands apart as the only one of those works to feature a foreword from a Star Trek star, it was not one of the works from this momentary publishing sub-genre to achieve best-seller status. Nevertheless, there were survival guides, cook books, investment manuals, and public facing explainers aplenty, with titles like: *101 Ways to Survive the Y2K Crisis*, *Surviving Y2K: The Amish Way*, *The Hippy Survival Guide to Y2K*, *Y2K for Women*, *Y2K & Y-O-U*, and many more. While plenty of these works clearly spoke to a readership of the survivalist bent, many were clearly targeted at religious readerships, and still others (including the most successful) were aimed at anyone who had been sufficiently unnerved by some stray headline as to want to find out more. Though Y2K, as was discussed in an earlier chapter, certainly generated a sizable stack of dry technical assessments targeted at IT professionals (and their managers), the sort of books that would have been shelved alongside the one featuring Nimoy's foreword, were aimed squarely at a mass audience. And while some of the authors of such works were eager to tout their own technical, or other applicable bonafides these accounts were less concerned with informing readers as to what they needed to do to fix their own computers to make sure nothing went wrong, and were far more concerned with telling readers what they needed to do to prepare should everything in society go horribly wrong.

[1100] Ibid.

Y2K was often discussed in tones and terminology that bordered on, if not outright embraced, the catastrophic and apocalyptic. And, as has been discussed and documented in earlier chapters, Y2K received that tonality from a range of groups. Certainly, there were many media outlets that played up (either seriously or mockingly) the most calamitous worst-case scenarios, but there were also elected officials who strayed into ominous commentary, and quite a few seasoned technical professionals who spoke in terms of impending doom. Throughout the Y2K era many in politics and the media turned a mocking gaze towards those who could be framed as representing an apocalyptic fringe, but such a withering stare easily overlooked the way that many of those on that "fringe" were echoing the sort of grim predictions that were being disseminated by the very same groups and people who were turning around to tut at those who were deemed to be overly concerned. There was plenty of coverage of what might go wrong, plenty of commentary on the work that was being done, and a deluge of swiftly changing information that could easily overwhelm the average person just trying to figure out what the heck they needed to do to prepare. And yet a question that many of the technical experts, government officials, and media outlets were hesitant to fully engage with was the question of what exactly the so-called "regular person" needed to be doing to prepare—and it was in that space that survival guides and community preparedness groups flourished.

Given the level of uncertainty amongst technical professionals and government officials (which was then echoed by many media outlets) the challenge, as Representative Horn put it at a hearing in 1998, was that Y2K could "be so vast and far-reaching that each and every single one of us must assume some responsibility to be Year 2000 ready," and while not ignoring those "scrambling to fix the Y2K problem," Horn emphasized that "we as consumers must also take

appropriate action.[1101] Granted, as Representative Barcia added a few moments later "Common information generally varies between scenes of gloom and doom, and assurances that there will be no real impact."[1102] And this sense of a juxtaposition between black and white alternatives was even felt by the highly-informed members of the committee, as Representative Morella stated "my feeling is sort of like between Chicken Little who said, 'the sky is falling;' and Pollyanna who said, 'Everything is fine."[1103] Yet what makes these particular comments significant is not simply that they were delivered at a Congressional hearing, but that testimony at that hearing was delivered by two people who were distinct from the standard parade of experts and bureaucrats that normally testified at Y2K hearings, namely: Paloma O'Riley and Michael Hyatt.

While O'Riley and Hyatt both represent public responses to Y2K, the difference between the two provides a useful (if overly simplistic) breakdown of the two primary camps into which public responses to Y2K can be divided. By her own admission, Paloma O'Riley claimed to have "an unusual background" that had involved spending many years living "a self-sufficient life-style;" granted she also had some serious technical qualifications as she had experience working in the Computing Security field.[1104] O'Riley's name had come to be closely associated with the name Cassandra as she had co-founded The Cassandra Project in 1997, an organization whose purpose was to encourage community preparedness in the face of Y2K. With chapters spread throughout the country (and some international ones as well), the goal of The Cassandra Project

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[1101] U.S. Congress. House of Representatives. Subcommittee on Technology of the Committee on Science and the Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and Oversight. 105th Cong., 2nd sess., *Y2K: What Every Consumer Should Know to Prepare for the Year 2000 Problem.* September 24, 1998. 3.
[1102] Ibid, 4-5.
[1103] Ibid, 112.
[1104] Ibid, 96.

was to promote "at-home grass roots participation in contingency planning for individual and community preparedness activities."[1105] And what was particularly important for The Cassandra Project was its true focus on community rather than individual preparedness, focusing on a clear commitment to an "all in it together" sort of ethos. Throughout the Y2K era, O'Riley was regularly interviewed in a variety of news sources, and something that set her apart from many other Y2K figures is that she was consistently promoting community preparedness as opposed to selling a book she had authored. Michael Hyatt styled himself as "the nation's leading Year 2000 consumer advocate" and his major claim to Y2K fame was connected to his 1998 book *The Millennium Bug: How to Survive the Coming Chaos*, which achieved best seller status.[1106] Though Hyatt openly admitted that he was "not a computer expert" he still couched his knowledge in having "a good deal of computer expertise" and described himself as "a part-time programming enthusiast."[1107] Hyatt made frequent media and conference appearances, and his great talent was not so much in generating new expert information about Y2K, but in collating the already existing information and presenting it in an accessible and public facing way. Though Hyatt's *The Millennium Bug* was targeted at a wide readership, the book was still clearly couched in a fairly-conservative Christian worldview—and this stance was made significantly clearer in Hyatt's writing on his Y2K website and in the two other Y2K books he published (both of which came out after his testimony before Congress): *The Y2K Personal Survival Guide* which was a fairly standard contribution to the Y2K survival guide genre (though bolstered by its connection to Hyatt), and the fictionalization of what might happen that Hyatt co-wrote with George Grant *Y2K: The Day the World Shut Down*.

[1105] Ibid, 97.
[1106] Ibid, 107.
[1107] Ibid.

Neither O'Riley or Hyatt represent the most extreme voices making predictions around Y2K—O'Riley was pushing for community preparedness but not off-the-grid survivalism, and compared to some other religious commentators Hyatt's work was distinctly non-apocalyptic. Yet in their testimony before Congress, O'Riley and Hyatt both demonstrated a willingness to push back, and indeed a skepticism towards the claims coming from government sources, that captures the problems of trust that undergirded so much of Y2K. While defending those involved in preparedness activity from the derision with which they were so often treated, O'Riley highlighted that far from "survivalists, paramilitary, or religious fanatics" the people her organization was working with were just people who "are willing to accept that they may need to be self-reliant for a short period of time."[1108] And O'Riley delivered a rebuke to Congress, and the Clinton Administration, that "by being silent or equivocal" they were "hampering these essential grassroots efforts."[1109] As O'Riley put it, given the information that was coming out, people needed to be preparing themselves, but "the vehement denial of the reality of the Y2K problem, reinforced by the lack of authoritative corroboration" was leading to too many people not bothering to prepare.[1110] Unlike O'Riley, Hyatt's published account meant that his assessment of what would happen was already clearly established. And though Hyatt acknowledged the uncertainty—"we do not know whether this will be a heartburn or heart attack"—he emphasized that alongside the need to "build awareness" and "press for compliance" what was "perhaps most important" was to start making "contingency plans" and "embark upon a comprehensive program of emergency preparedness."[1111]

[1108] Ibid, 91.
[1109] Ibid.
[1110] Ibid.
[1111] Ibid, 99.

In speaking to what he perceived as the frustration of the "average consumer" who didn't want "a lot of mumbo jumbo" over whether something was Y2K compliant or not, Representative Horn stated "I learned long ago, I don't trust anybody that says anything about a computer. I learned that as a university president. You're just constantly misled, and that bothers me."[1112] And yet even as he spoke to a level of mistrust in the claims coming out of the computing sector, the testimony from Hyatt and O'Riley stands as an important retort that there was also a not inconsiderable amount of distrust in what the government was saying. As O'Riley put it "We need to have a very frank and open public discussion about Year 2000, because there's still too many people out there who are thinking that it's not a problem" and the reason why many were taking such a stance was "because they heard a person over here or a Congressman or a Senator say that, 'Well, it's looking good.'"[1113] And if that "frank and open public discussion" was not going to come from the government, many groups and individuals felt that it fell on them to have those conversations themselves.

Focusing on the likes of Hyatt and O'Riley, this chapter considers Y2K from the perspective of members of the public who were seriously concerned about Y2K. Here, the descriptor "members of the public" is not meant as a stand-in for "the public" as such, but is instead meant to differentiate these figures from technical professionals, government employees, and members of the media. The groups and individuals focused on in this chapter include the various (largely religious) authors who produced work that spoke of Y2K in distinctly apocalyptic tones, and the organizations that sought to prepare for Y2K out of a belief that the likelihood of catastrophe was higher than the government was willing to admit. This chapter

[1112] Ibid, 110.
[1113] Ibid, 119.

draws heavily upon the books that were published by these individuals, the website's and public comments of the organizations, and the archival records of the Center for Y2K and Society (notably their "report card" project). This chapter considers not only the way that these individuals and groups interpreted the information about Y2K that was being issued by various experts, but the sorts of actions they argued these interpretations made necessary.

Talk around Y2K often featured allusions to doom-mongers and survivalists urging people to stock up on guns and get off the grid, and such figures were usually brought up as targets of derision. Nevertheless, the label of "doom-monger" was one that a person or a group often found had been bestowed upon them, regardless of whether or not an apocalyptic worldview was the one to which they actually ascribed. While it may be tempting to bracket many of the voices in this chapter under a heading of "fringe" and banish them to the hinterlands, or suggest that devoting attention to them distracts from the serious technical and political realities of Y2K, these figures nevertheless represent an important part of the story of Y2K. On one level, these groups and figures must be acknowledged as they played a real role in shaping the public narrative (and lasting memory) of Y2K—it was not only that Hyatt and O'Riley testified before Congress, but that media narratives loved looking at these "fringe" figures. On a second level, these groups and figures need to be considered as they were filled with the individuals actually consuming and trying to make sense of the information about Y2K that was coming out.

As this chapter will no doubt demonstrate, there was some strange material that came out regarding Y2K. And there were certainly some individuals who mapped their conspiratorial beliefs about impending government takeover, or their religious convictions about the approach of the biblically ordained apocalypse, onto Y2K. Nevertheless, actually considering the writings

and commentary of these groups provides a more complicated picture. For amidst many comments that could easily strike those not sharing their values as odd, or even dangerous, many of these individuals were also seeing Y2K as an opportunity to wrestle with deeper questions regarding what computers had done, were doing, and what they would continue to do to society.

Of Joseph and Revelations

"I am convinced that God has allowed the Y2K problem to surface for a specific purpose of His own, a purpose that includes the building up of the Church and the salvation of men," is how Michael Hyatt framed Y2K in a lengthy essay he posted to his website.[1114] While those who had first come to know Hyatt in relation to Y2K thanks to his largely secular bestseller *The Millennium Bug: How to Survive the Coming Chaos* might have been surprised by this religious message, the essay's title "A Special Message for Christians: Y2K and Our Christian Duty" clearly suggested that what would follow would be religiously inflected.[1115] As Hyatt noted, in an introduction explaining the nonreligious tone of his book, with the book he "believed the Lord called me to reach the largest possible audience possible," yet with the essay on his website he

[1114] Michael Hyatt. "A Special Message for Christians: Y2K and Our Christian Duty." *MichaelHyatt.com* (http://michaelhyatt.com/christians.htm: 1999); archived at *Wayback Machine* (http://web.archive.org/web/19991013090421/http://michaelhyatt.com/christians.htm).

[1115] Note: readers of *The Millennium Bug* will likely still be able to detect the ways in which that book is influenced by Hyatt's faith. Throughout that book Hyatt does not refrain from acknowledging his faith, or the way it is shaping his assessment. Nevertheless, especially in comparison to many of the other works that will be discussed in this chapter, it is quite clear that Hyatt was seeking to write for a broad public audience that was not exclusively made up of his fellow believers. While some of the other books in this section will draw heavily on biblical prophecy and will routinely cite bible verses, *The Millennium Bug* avoided explicit attempts to link Y2K to the Bible. Compared to some of the other books that appeared about Y2K (notably the technical manuals, and a couple of the other "explainers"), *The Millennium Bug* still has a little bit of a religious valence, but it is more subtext than text. Nevertheless, the description of *The Millennium Bug* as "largely secular" is in keeping with Hyatt's own assessment of that work. A similar assessment can largely be made of his *The Y2K Personal Survival Guide*, though the Y2K novel he co-wrote *The Day the World Shut Down* (discussed later in this chapter) is decidedly more religious.

was emphasizing that he did see a religious dimension to Y2K, and that there was an aspect of Y2K that called for a particular response from the Christian faithful.[1116]

While Hyatt noted that "the cause for the crisis is one and the same for both the believer and the unbeliever," and he emphasized that there were some simple precautions both groups could take to prepare, he nevertheless emphasized that "we as Christians" were called to respond in a greater way.[1117] Christians facing Y2K had four responsibilities according to Hyatt, and these were: "Responsibility to Trust" which involved putting trust in God that Y2K was all part of the Lord's plan; "Responsibility to Repent" which required Christians to understand how their sins (and the sinfulness of modern society) had created the conditions for Y2K; "Responsibility to Prepare" which highlighted that even as Christians trusted in God that they needed to heed the lesson of Proverbs 22:3 and remember that the prudent prepare; and "Responsibility to Share" that Christians needed to be ready not just to help themselves, and not just help other Christians, but to help all of those who might be adversely affected by Y2K.[1118] Hyatt's comments on these four "responsibilities" were peppered with the sentiment that Y2K was striking an already fallen modern world, and he criticized how in modern society "the one god that reigns supreme is the god of science and technology" with the "incarnation" of that god being "*the computer*."[1119] And Hyatt wondered if perhaps "the Lord is using the Y2K problem to smash the false god of technology and turn our hearts toward Him?"[1120] Yet beyond the ruminations on computers, Hyatt remained focused on Y2K as a serious problem that could result in dramatic consequences, and in this potential chaos Hyatt saw an opportunity for Christians "to witness to the world," an

[1116] Hyatt. "A Special Message for Christians: Y2K and Our Cristian Duty." *MichaelHyatt.com*.
[1117] Ibid.
[1118] Ibid.
[1119] Ibid, italicized text in original source.
[1120] Ibid.

opportunity not only "to evangelize" but also, especially if Y2K related failures should be severe, "an opportunity to lead society."[1121]

Hyatt was far from alone in having this sort of religiously inspired response to Y2K: one that cast a distrustful gaze towards computers, while seeing Y2K as something of a particular opportunity for Christians to live (and demonstrate) their values. There certainly were some, as will also be discussed in this chapter, who attempted to fit Y2K into biblical prophecies of the end times—but there were also some like Hyatt who saw Y2K not so much as the end of days, but as the end of the computer's days. Yet what unites so many of the religious figures who wrote about Y2K is that amidst so many reputable sources touting the dangers of Y2K, they did not need to focus great effort on arguing that Y2K was real, and could instead truly think through what Y2K meant for their co-religionists. For Shaunti Feldhahn, the founder of the Joseph Project and the author of several books on Y2K, the computing crisis provided an opportunity for Christians to be "lighthouses," it was a "seemingly absurd technical problem" through which God was giving Christians "the chance to pray, to care, and to share what is most important with those around you."[1122] Similarly, Karen Anderson, whose Y2KWomen website provided Y2K information targeted specifically at women, framed Y2K as "a great adventure" while emphasizing that in the face of likely government wide failures "the church needs to be ready to provide for people."[1123] Granted, in contrast to the wary hopefulness of Feldhahn and Anderson there were those who were hoping that Y2K was the fulfillment of biblical prophecies, figures like N.W. Hutchings and Larry Spargimino who wrote "The Y2K problem is creating the very

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[1121] Ibid.
[1122] Shaunti Feldhahn. "Y2K: A Lighthouse Opportunity." In Cornell Haan (ed.) *The Lighthouse Movement Handbook.* (Sisters: Multnomah Publishers, Inc. 1999). 80-82.
[1123] Karen Anderson. *Y2K for Women: How to Protect Your Home and Family in the Coming Crisis.* (Nashville: Thomas Nelson Publishers, 1999). 47 and 48.

conditions prophesied for the end of the age!"[1124] There were others, like the writer and speaker on bible prophecy, Grant Jeffrey who simultaneously noted "the sky will not fall" while also seeing it as his "duty as a Christian communicator…to warn my readers of the very real dangers ahead," dangers that could even include "the final signs that Jesus Christ is about to return to establish his millennial kingdom on earth."[1125] And then there were other Christian authors such as Dave Hunt, who had published extensively on bible prophecy, who looked askance at all of the hype around Y2K and warned that all of the "unnecessary anxiety" might just "engender disillusionment with the church and Bible prophecy when Y2K doesn't live up to devastating expectations."[1126]

In this part of this chapter, I will engage with these various religious responses to Y2K, in order to show how these assorted figures were viewing Y2K and how they fit the computing crisis into their already existing worldviews. I will show how these figures made use (and misuse) of official sources regarding the threat of Y2K, and how they balanced that use of official sources out with their use of the Bible as their most significant source. Far from suggesting that there was a singular religious response to Y2K, I will highlight the different assessments between these figures, that ran the gamut from expecting biblical apocalypse, to expecting real world disruptions that would provide Christians with an opportunity to serve and bear witness, to worries that in talking up Y2K so much many Christians were running the risks of delegitimizing themselves should Y2K failures be minimal. And throughout all of these assessments, I will specifically highlight how these figures talked specifically about computers

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[1124] N.W. Hutchings and Larry Spargimino. *Y2K=666?* (Oklahoma City: Hearthstone Publishing, 1998). 99
[1125] Grant Jeffrey. *Millennium Meltdown: Spiritual and Practical Strategies to Survive Y2K.* (Wheaton: Tyndale House Publishers, Inc. 1998). 23-25.
[1126] Dave Hunt. *Y2K: A Reasoned Response to Mass Hysteria.* (Eugene: Harvest House Publishers, 1999). 235.

and how the computer had impacted society. The various individuals and works that have been selected for this section were picked as they provide a good representative selection of a range of perspectives amongst members of the religious right (some more left-wing religious perspectives will be considered in the second part of this chapter). While some of the figures in this chapter are being discussed due to prominence or being the recipient of media attention, most of the figures were selected because they engaged with Y2K in multiple ways—in some cases this means they had written about computers prior to Y2K, and in other cases it means that they also provided fictionalized accounts of what Y2K would bring which thereby provides a window into the apocalyptic imaginary they spun up around the crisis.

Discussing "Y2K and Our Christian Duty," Hyatt wrote "God has given to the secular computer experts a vision of what will happen when the calendar rolls over to the year 2000; it's up to Christians, however, to see the true meaning of this event and to respond accordingly."[1127] What then was this "true meaning," and what then did it mean "to respond accordingly"?

The Computer and The Beast

For many segments of society, Y2K served as something of a wakeup call regarding the potential downsides of embracing the computer. A sentiment that was evocatively captured when Senator Moynihan had warned that the computer which had "been a blessing" had the potential of becoming "the curse of the age."[1128] While Moynihan had been giving voice to a feeling that was shared by many in the government, media, business, and ostensibly the broader society

[1127] Hyatt. "A Special Message for Christians: Y2K and Our Christian Duty." *MichaelHyatt.com.*
[1128] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Investigating the Year 2000 Problem: The 100 Day Report.* 106th Cong., 1st sess., September 22, 1999. S. Prt. 106-31. 212.

about computing—there were also those who had long been wary of the claim that the computer was "a blessing" and who saw the computer not only as "the curse of the age" but as a sign that the end of an age had been reached.

It was perhaps inevitable that the coming of the year 2000 would be greeted with a certain level of eschatological fervor. After all, the arrival of the year 1000 had been met with predictions that the, biblically predicted, end of days was at hand—and though the shift into the current millennium had not involved apocalyptic incident, there were plenty of religiously minded individuals and groups that were gazing with a mixture of fear and excitement towards 2000. Twentieth century apocalypticism took on many forms, ranging from secularized anxieties about nuclear Armageddon and ecological destruction, to a legion of Christian inflected variants that took the dispensationalist stance of, as Daniel Wojcik describes it, "interpreting current events as the prophetic fulfillment of a precise endtimes scenario."[1129] Thus, it was not so much that Y2K generated an as yet non-existent apocalypticism, as that Y2K provided those who already believed in a coming apocalypse a rich incident onto which they could project their already existing beliefs. Case in point: having risen to prominence thanks to his dispensationalist best-seller *The Late Great Planet Earth*, Hal Lindsey would eventually incorporate Y2K into his assessment of the signs of the end with his 1998 book *Facing Millennial Midnight: The Y2K Crisis Confronting America and the World*. Nevertheless, in exploring the uptake of Y2K (but before shifting our attention specifically to Y2K), it is worthwhile to specifically consider how some of those who would later write about Y2K, had written about the computer prior to all the fanfare about the year 2000 computing crisis.

[1129] Daniel Wojcik. *The End of the World as We Know It: Faith, Fatalism, and Apocalypse in America.* (New York: New York University Press, 1997). 37.

There are far worse ways to summarize the underlying danger of Y2K than with the sentence "If the computers were suddenly silenced, the world would be thrown into instant chaos."[1130] The only problem being that sentence was not written about Y2K, but instead appears in David Weber and Noah Hutchings' 1986 book *Computers and the Beast of Revelation*. Weber and Hutchings were both closely affiliated with the Southwest Radio Church, and by the time they wrote the earlier sentence had established themselves within the world of Christian broadcasting and writing.[1131] Their book blends lengthy quotations from mass media reporting with commentary on those developments drawn largely from the Book of Revelation, the technique throughout the book is to draw direct lines from a description that appears in a report with something that had been prophesized as a sign of the approach of the end times. While many of their conclusions linked to the Book of Revelation would likely feel rather unconvincing to those who did not share their religious convictions, undergirding Weber and Hutchings commentary was a much more straightforward conclusion: "every facet of modern life has been altered by the computer."[1132] A line which would likely have been agreed with by most Y2K commentators, but which had been written not in the context of Y2K but in 1986.

Though the computer was already changing everything by the middle of the 1980s, in Weber and Hutchings' estimation, the changes that had occurred were only a taste of what was to come. Weber and Hutchings warned their readers that soon: computers would "abolish all money" replacing it with "code marks and numbers," they would "be installed in every classroom," would be "in every home," would be used to monitor "every person on earth" and

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[1130] David Webber and Noah Hutchings. *Computers and the Beast of Revelation*. (Shreveport: Huntington House, Inc., 1986). 8.
[1131] Ibid, 152-153.
[1132] Ibid, 8.

perhaps "computerized, orbiting satellites" would even "control the thinking of men and women," the computer would displace humanity in the God-given responsibility of "retaining dominion over the animal kingdom," rapid advances would quickly "make the computers of a year ago obsolete," would gradually intrude "into the domestic spheres of everyday life," and the computer would continue "replacing" human workers whether they were "factory workers" or "psychiatrists" or "school teachers."[1133] While Weber and Hutchings did not seem to feel a need to establish their biblical bonafides, they were fairly careful to avoid basing their technological predictions on pure speculation. Instead, they drew their material for their technological prophecies from the likes of *Time Magazine*, *U.S. News & World Report*, *Science Magazine*, *The Christian Science Monitor*, *Discover*, *Newsweek*, *Computerworld*, as well as various local newspapers. Edward Feigenbaum and Pamela McCorduck's excited forecasts in their 1983 book *The Fifth Generation*, regarding their predictions for dramatic advances in computing and artificial intelligence, clearly had an impact on Weber and Hutchings—though they reacted rather warily to the very things about which Feigenbaum and McCorduck were so enthusiastic.[1134] And though there is nothing to suggest that Weber and Hutchings had read the critique of computers by the computer scientist (and sparring partner of Feigenbaum and McCorduck) Joseph Weizenbaum, Weber and Hutchings approvingly quote from and point to Weizenbaum at multiple points.[1135] Nevertheless, Weber and Hutchings had not titled their book *Computers* but *Computers and the Beast of Revelation*, and all of their attention to various trends in computing was ultimately in service of drawing attention to the Beast.

[1133] Ibid, 25, 31, 37 (this comes from a *U.S. News and World Report* article Weber and Hutchings quote from at length), 62, 70, 116, 117, 126.
[1134] Ibid, 34-46.
[1135] Ibid, 46, 119-120. In both of these cases Weber and Hutchings are quoting Joseph Weizenbaum being quoted in other articles, as opposed to quoting Weizenbaum directly.

Weber and Hutchings began their book with quotations from the Book of Daniel and the Book of Luke, but in seeking to point to the danger of computers they pointed to the Book of Revelation—and two verses in particular to which many of their fellows would return when discussing computers, and by extension Y2K. As Weber and Hutchings described it, the way that computers relied on numbers and code, and the way in which computers were sweeping through the financial world set the stage for "a precise fulfillment of Revelation 13: 16,17."[1136] With those two verses reading as follows: "And he causeth all, both small and great, rich and poor, free and bond, to receive a mark in their right hand, or in their foreheads: And that no man might buy or sell, save he that had the mark, or the name of the beast, or the number of his name."[1137] Weber and Hutchings predicted that the computer would lead to money being abolished, replaced by computerized "code marks and numbers" and those who were unwilling to make such a transition would soon find themselves unable to "buy or sell."[1138] While the era of electronic money would arrive by things like smart cards, advances that were taking place regarding putting transponder chips in animals suggested a future where such devices could one day be implanted in people.[1139] What mattered about computers was that they provided the technological means by which Revelation 13: 16, 17 could finally come true.

The sixteenth and seventeenth verses were not the only parts of Revelation 13 that stood out to Weber and Hutchings as forebodingly foretelling the emergence of the computer as a major force in the world. Indeed, Revelation 13: 13-15, which spoke of "great wonders…in the sight of men," deceptive "miracles" performed in "the sight of the beast" and "the image of the

[1136] Ibid, 8.
[1137] Ibid.
[1138] Ibid, 25.
[1139] Ibid, chapter 4 and chapter 6.

beast" being made such the image was given "life" and made able to "speak"—all suggested to Weber and Hutchings connections to the computer.[1140] As Weber and Hutchings saw it, these references to how an "image" would be able to speak made perfect sense if this image was understood to be "a machine," namely a computer.[1141] And it seemed clear to them that the advances in networking, computing, and telecommunications were laying the ground work for the prophesied ways that the antichrist would be able to communicate to all the people of the world. With the omnipresent computer as a "guide and counselor" in each person's life, Satan was duplicating and displacing the role that was meant to be fulfilled by an omnipresent God.[1142] Nevertheless, writing in 1986, the computer had not yet reached a point where it could fulfill all of the prophecies, though the expected advances in supercomputers, and the emergence of a universal computer, would truly allow the prophecies to come true.[1143]

A little less than a decade later, after Peter de Jager's "Doomsday 2000" had been published but still well before the public started waking up to Y2K, the sorts of concerns raised by Weber and Hutchings could still be seen percolating. For Grant Jeffrey, much like Weber and Hutchings, "the prophecies of the Bible" provided a way "to understand the rapidly unfolding events in our generation" and a comparison between those prophecies and current day events provided ample evidence that the "last days" could be at hand.[1144] Jeffrey's comprehensive analysis of the signs in his 1994 book *Prince of Darkness* warned of the ways that the Trilateral Commission, the World Bank and International Monetary Fund, the North American Free Trade Agreement, the UN, CNN, and the Gulf War all indicated that end was coming soon. And though

[1140] Ibid, 116.
[1141] Ibid, 66.
[1142] Ibid.
[1143] Ibid, chapter 10.
[1144] Grant Jeffrey. *Prince of Darkness: Antichrist and the New World Order*. (Toronto: Frontier Research Publications, 1994). 7.

Prince of Darkness was not focused entirely on the computer, throughout the book the computer comes up again and again—he never treats the computer as though it is itself "the Beast" though he makes it quite clear that it is a tool which will be exploited by the Beast. In assessing the Biblical prophecies regarding "the mysterious Mark of the Beast" Jeffrey noted that it was "Recent advances in the technology of surveillance" that would make that "ominous prophecy possible."[1145] Jeffrey warned of the threat of biometric identification systems, voice print technology, laser and optical scanning, and bar coding, while highlighting the Orwellian buildup of massive troves of information in computer systems that contained a "staggering amount of personal information on every private citizen" that could be secretly accessed by much of the government (and nefarious hackers).[1146] Of particular concern was the emergence of computer chips that could be placed beneath the skin, the sort that were being used for pet identification, but which could potentially come to replace things like credit cards.[1147] Jeffrey drew a direct line from the possibility of such chips being implanted in humans to the "mark on their right hand" mentioned in Revelation 13: 16, noting that even as those lines had long fascinated believers in Bible prophecy that system had been "technically impossible" until the technological advances "during the last decade."[1148] While recognizing how reasons of convenience would appear to many like "good arguments for introducing such a system," this mark would still represent "a soul sold out to Satan."[1149] But in his pre-Y2K focus on computing, Jeffrey demonstrated an analysis he would bring over to his later focus on Y2K, namely that "advanced computer

[1145] Ibid, 91.
[1146] Ibid, 95.
[1147] Ibid, 110.
[1148] Ibid, 275-276.
[1149] Ibid, 280-281.

technology" was making the fulfillment of certain biblical prophecies "possible for the first time in history."[1150]

Around the same time that Jeffrey was making this argument in *Prince of Darkness*, his associates Peter and Paul Lalonde—hosts of the program "This Week in Bible Prophecy" who collaborated with Jeffrey on his film "Final Warning"—were diving much deeper into the computer Revelation connection in their book *The Mark of the Beast: Your Money, Computers, and the End of the World*. While acknowledging that "No one can say precisely what technology will be used to fulfill the prophecy of the mark of the beast," the Lalondes nevertheless emphasized that Revelation 13 had "foreshadowed the modern-day, computerized global economic structure."[1151] In a telling shift of what had happened in the years since Weber and Hutchings' previously mentioned book, the Lalondes observed that "The culture shock of the computer age is beginning to wear off", and emphasized that computers were being "passionately" embraced by the "under-45 crowd."[1152] This meant that the sorts of things that should have inspired revulsion and concern—such as the idea of a person having a biometric chip implanted in their hand—were being met by shrugs as the computer had become a common feature of daily life. Of course, the emergence and acceptance of all of these technologies only confirmed that Revelation 13 showed "God is way ahead of the latest biometric engineers, smart card developers, and global communication system planners."[1153] In words nearly identical to those used by Jeffrey, the Lalondes emphasized that even as the computers they were talking

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[1150] Ibid, 278.
[1151] Peter Lalonde and Paul Lalonde. *The Mark of the Beast: Your Money, Computers, and the End of the World.* (Eugene: Harvest House Publishers, 1994). 20. Note: based on the cover of this book it can also seem that the book's title is *Racing Toward the Mark of the Beast*. However, I refer to it as *The Mark of the Beast* based on the Library of Congress cataloging in publication information found within the book.
[1152] Ibid, 26-27.
[1153] Ibid, 87.

about were "*not* the mark of the beast" the many developments they cited showed "For the first time in history, the technology to easily fulfill this incredible prophecy exists."[1154]

At the close of *The Mark of the Beast*, the Lalondes warned that the tendency among "prophecy buffs" to sensationalize issues often led "to prophetic apathy rather than prophetic awareness."[1155] Highlighting the need for "documentation," the Lalondes fretted that "False reports and silly rumors only damage the credibility" of prophecy, and specifically of the Revelation 13 prophecy.[1156] Thus, the Lalondes begged their readers to "Be part of the solution by checking out the rumors yourself and by requiring your sources to verify their facts."[1157] Comments that provide a fitting foreshadowing for the challenges their community would face as it sought to make sense of Y2K.

Joseph or Armageddon?

Commenting on an article that had appeared in a 1978 issue of *Time Magazine*, Weber and Hutchings in their book from 1986 argued that "we have passed the computer point of no return," a point which they described as one wherein "it is no longer a fear of a computer-controlled society that haunts the business world, but rather a fear that the computer will be taken away."[1158] While a debate could be had regarding the accuracy of the various predictions Weber and Hutchings had made throughout the pages of *Computers and the Beast of Revelation*, their claim about "the computer point of no return" was one which Y2K seemed to loudly confirm for

[1154] Ibid, 102-103. Italics in original text.
[1155] Ibid, 195.
[1156] Ibid, 197.
[1157] Ibid, 199.
[1158] Webber and Hutchings. *Computers and the Beast of Revelation*. 91.

them. And that confirmation came not from those steeped in the techniques of analyzing biblical prophecy, but instead (as has been noted in earlier chapters of this dissertation) from technical professionals, government sources, and many mainstream media outlets. In the introduction to *Computers and the Beast of Revelation*, Weber and Hutchings wrote: "If the computers were suddenly silenced the world would be thrown into instant chaos,"[1159] and twelve years later Hutchings (now joined by Larry Spargimino) began his book *Y2K=666?* by reprinting the former book's introduction without any edits.[1160] And Hutchings made the connection explicit, highlighting how in 1986 he had "noted specifically the possibility of every main computer in the world shutting down," and now "here in 1998, almost without warning, we are informed by the most expert computer technicians in the world that this could literally happen on January 1, 2000 A.D."[1161]

Whether Y2K would be a triggering event for the end of days, or whether Y2K was just another sign that the era of the end was at hand, was a matter of some disagreement amongst the apocalyptically attuned. With some considering Y2K to be evidence that the faithful needed to prepare for the very real rise of the Antichrist, and still others seeing Y2K as a crisis requiring that people prepare their pantries and their communities for a period that could involve blackouts and disruptions of essential services. Though these various perspectives are being grouped together here due to their shared religious perspective, this chapter will highlight the differences in forecasts and the range of recommendations for preparing. Some clearly applied dispensationalist principles to Y2K in order to line it up with biblical predictions, while others saw it less as the literal onset of the period of Tribulation and more as the standard sort of

[1159] Ibid, 8.
[1160] Hutchings and Spargimino. *Y2K=666?* 9-13.
[1161] Ibid, 14.

tribulation that societies periodically weather. Nevertheless, what the various groups and figures here discussed share was a sense that responding to Y2K was not just about a technological response, but perhaps more vitally a spiritual response. While for some people Y2K was a revelation regarding the ways in which modern society had come to be so heavily reliant on fragile and error-prone computers, for those already steeped in Revelation Y2K could be slotted into an already existing analysis of the world and world events—rather than a result of some computer programmers' inability to plan properly, Y2K could be proof of God's plan. As Hyatt had put in his message to Christians: "everything falls out according to God's purpose. And that includes the Millennium Bug."[1162]

But how exactly did the Millennium Bug fit within "God's plan"? Around that question there were, unsurprisingly, mixed opinions. And while these opinions represented differences in scriptural analysis, on a more foundational level they involved fairly basic differences in opinion regarding what Y2K was, and what it would bring. For Hyatt, writing for a broad public audience, Y2K was a reflection of the fact that "Almost every aspect of our lives is regulated, controlled, monitored, enhanced, or made more convenient or efficient by computers" and as a result of this Y2K presented "potentially the most significant, extensive, and disruptive crisis we have ever faced."[1163] Meanwhile Hutchings and Spargimino observed that seemingly everyone, not just the "prophecy buffs and doomsday alarmists" were talking about Y2K, and they noted that it was our convenience driven "increasing dependence on the computer" which was responsible for "setting the stage for what could be the greatest ordeal the human race has ever

[1162] Hyatt. "A Special Message for Christians: Y2K and Our Christian Duty." *MichaelHyatt.com.*
[1163] Michael S. Hyatt. *The Millennium Bug: How to Survive the Coming Chaos.* (New York: Broadway Books, 1998). xvi-xvii.

experienced."[1164] Avoiding hyperbolic language, Shaunti Feldhahn summarized Y2K as "a relatively simple problem with a relatively easy fix but an overwhelming magnitude," with this simple problem being a result of "how fundamental computer technology is to the smooth functioning of our entire society."[1165] And Grant Jeffrey argued that "modern society will reap the whirlwind" brought about by these "engines of modern society" and all because of a seemingly innocuous choice made decades earlier by computer programmers—though Jeffrey also added that in the estimation of "many scholars of Bible prophecy" Y2K was being seen as a crisis that would "hasten the creation" of the sorts of institutions prophesized for the end times.[1166] While on the opposite side of the predictions, though still within this biblically minded community, Dave Hunt acknowledged that Y2K represented a serious problem rooted in "the fact that today's modern world is almost totally dependent upon computer technology," however he emphasized "the problem is well known and so is the solution that is being effected right now."[1167] Multiple bookshelves can be filled with the publications from religious presses regarding Y2K, and the previous observations are but a sampling of the sentiments found in those books, nevertheless they stand as a good representative sample that speaks to a shared recognition that at core Y2K related to the growing importance of the computer, that the risk it represented was quite real, but that there was a fair amount of divergence in terms of what exactly would happen. And to try to assess precisely how Y2K would fit within "God's plan" was made difficult by the uncertainty as to what exactly would happen when 1999 finally became 2000.

[1164] Hutchings and Spargimino. *Y2K=666?* 33, 38-39.
[1165] Shaunti Feldhahn. *Y2K, The Millennium Bug: A Balanced Christian Response.* (Sisters: Multnomah Publishers, 1998). 36, 33.
[1166] Jeffrey. *Millennium Meltdown*. 9-10.
[1167] Hunt. *Y2K: A Reasoned Response to Mass Hysteria.* 10, 6.

In considering the various premonitions regarding Y2K it is useful to be attuned to the presence of words like "potentially" and "could be" for the way that they gesture towards uncertainty. Even amongst those who were doubtful that the crisis would result in tragedy, there was not much effort to deny the existence of Y2K, but there was considerable uncertainty about what would happen. And it was precisely this combination—widespread agreement (including from reputable official sources) about the existence of the crisis paired with significantly less agreement regarding exactly what would happen—that provided fertile space for apocalyptic imaginaries to grow. As has been noted in earlier chapters, efforts to inform the non-technical public about Y2K had often been couched in a refusal to make a definitive judgement pertaining to exactly what would happen. Whether it was Representative Horn's report cards, the comprehensive reports issued by the Senate's special committee on Y2K, or the outpouring of coverage from mainstream news outlets—there was an aura of uncertainty that consistently surrounded Y2K. And for those who were predisposed to be skeptical of optimistic government pronouncements—especially when a Democrat was in the White House—the fact that the government was being so noncommittal suggested that the reality had to be even worse. As Hal Lindsey and Cliff Ford put it, "The experts are divided on just how severe the crisis will be, but nobody is denying the fact that there will indeed be a crisis."[1168]

While many tried to predict, or truly imagine (as will be discussed later), what exactly would happen, few were as explicit in laying out possible scenarios as Michael Hyatt was in *The Millennium Bug*. Indeed, much of Hyatt's book is constructed in such a way as to steadily build toward the three scenarios that he outlines in "Seeing Through a Glass Darkly" the ninth chapter

[1168] Hal Lindsey and Cliff Ford. *Facing Millennial Midnight: The Y2K Crisis Confronting America and the World.* (Minneapolis: Wester Front Publishing, 1998). 11.

of his book.[1169] Over the course of the preceding eight chapters (and the introduction), Hyatt had fastidiously drawn on government officials, technical experts, and decidedly mainstream news coverage in order to provide his readers with his assessment of the range of potential problems, as well as the reasons why all of those problems would probably not be fixed in time. Though Hyatt certainly provided his share of quips and less than optimistic editorializing, the first eight chapters of his book were carefully sourced, and he made it clear to his readers that the gloomy sentiments he was conveying came from those who were well and truly in the know. Yet, as he pivoted to speculations about possible scenarios, Hyatt admitted that "History is littered with the unfulfilled predictions of would-be prophets."[1170] Thus, at least in *The Millennium Bug*, Hyatt did not so much dispel as lean into the uncertainty surrounding Y2K, his scenarios were not to be taken as a definitive statement of what would happen, but some factually grounded playing around with what could happen.

For those curious about what Y2K would bring, Hyatt outlined three possible scenarios. Actually, he outlined four possible scenarios, though he treated the first of these as barely worthy of consideration. This "Nonscenario" being the view "that the year 2000 computer problem will be a nonevent" one characterized by "a few isolated computer problems here and there" but overall "a *smooth transition* into the next century" without "any significant disruptions in our way of life."[1171] Hyatt saw this as "simply not a viable scenario," and thus he chose to focus instead on what he deemed to be the three more realistic possibilities: Brownout, Blackout, and Meltdown. The "Brownout" scenario was based on the idea that a vast number of systems would be repaired on time, but those that were not would still cause problems (including some

[1169] Hyatt. *The Millennium Bug*. 159-181.
[1170] Ibid, 160.
[1171] Ibid, 161.

cascading ones), this scenario would likely last "at least two weeks" or possibly "as long as three months" and though "Social stability will not be threatened" the various problems involved would still "have a significant negative economic impact, resulting in a severe recession."[1172] The "Blackout" scenario still had at its core a belief that a majority (between 70 and 80 percent) of systems would be fixed, but in this case rather than "*isolated* system failures" the prediction was for "*multiple* system failures—under this scenario the grid would likely collapse, and martial law would likely be in place, "invasion from a low-tech country with a huge army" was a possibility; here for between "four months" and "three years" the situation would be one wherein "Chaos will be the norm—at least for a while" and the country (indeed the world) would be caught up in a massive economic depression.[1173] As for "Meltdown"? Hyatt only detailed this scenario slightly more than the "nonscenario" that he deemed unworthy of serious attention, but in the case of "Meltdown" it was not because he saw it as impossible, but because it just seemed too depressing to contemplate at length. "Meltdown" was pretty much akin to collapse, and envisioned not only temporary disruptions but the shutting down of the banks and the government (including the army), in this case Hyatt saw the possibility of civil war and conflict between local militias—the situation would be somewhere between the "wild, wild west" and a "new dark age."[1174] But which of those three (not including the "nonscenario") scenarios would it be? Hyatt emphasized that his goal in outlining these scenarios was not to play prophet but "to stimulate your thinking," and though he noted that he was "not a pessimist by nature," he chose a scenario that he had not actually bothered to describe namely "somewhere between the

[1172] Ibid, 162-167.
[1173] Ibid, 167-173.
[1174] Ibid, 173-175.

Brownout and Blackout scenarios."[1175] Hyatt noted that it would all really come down to whether or not "the power grid and the banking system make it," but based on the previous chapters of his book (and his own prediction) it seemed pretty clear that Hyatt was not predicting the banks and grid would get through without any problems.

Confronting a scenario in which, as Hyatt put it, "the point of absolute certainty will never come," those approaching Y2K through a Biblical lens were able to draw on something else for certainty: the Bible.[1176] And even if the news stories and government reports on which they drew provided mixed signals regarding which scenario was most likely, they could find peace in this uncertainty by turning to God. While Hyatt's scenarios were not explicitly drawn on by the other authors being discussed here, his three scenarios still provide a useful spectrum for sorting through various predictions. Despite ominous comments about the various disruptions that particular scenarios might bring, there is a certain sense of longing that seems to undergird many of the Biblically couched writings on Y2K. A sense in which major Y2K caused chaos would not simply represent failure but would provide some sort of opportunity for the realization of a particular hope or desire. Thus, the "Brownout" could provide an opportunity for Christians to evangelize to their neighbors as they and their churches stepped in to fill the temporary void created by government failures; the "Blackout" could lead to further steps on the part of world governments that would demonstrate the further fulfillment of Biblical prophecy (attesting to the fact that the end of days was approaching); while a "Meltdown" would provide evidence that the end of days was not simply approaching but was already at hand. Here, making predictions around Y2K was not primarily a matter of a sober assessment of the available facts followed by a

[1175] Ibid, 175, 180.
[1176] Ibid, 180.

disinterested outlining of likely occurrences, rather Y2K predictions were closely bound up with a desire for Y2K to be the fulfillment of a religious hope that the author had held before the onset of the computing crisis.

Looking back at the bubonic plague outbreak in England of the 1660s, Shaunti Feldhahn wrote that "What looked like a disaster was actually a divine challenge and an opportunity for people of God."[1177] With a background investigating risk factors for the government and business, she had been a financial analyst for the Federal Reserve Bank of New York, Feldhahn's account of Y2K drew heavily on the commentary of figures like Peter de Jager, Capers Jones, and the official statements coming from Representative Horn and Senator Bennett. The description she provided of Y2K was one that highlighted the ubiquity of computers in modern society, and that emphasized that the challenge of Y2K was not that the work was not being done, but that there was so much work to do and not a lot of time in which to get it done. Assessing Y2K, Feldhahn discussed how procrastination—driven by a mixture of "greed/self-concern…denial" and "assuming a magic bullet"[1178]—was preventing the necessary action on Y2K on the part of many groups, and she placed particular emphasis on "denial" as a factor that led people to ignore the threat as they simply could not imagine that it could actually come to pass.[1179] Feldhahn was closely attuned to what the experts were saying about the problem, and as she considered what would happen she acknowledged that "The most fundamental characteristic of the Millennium Bug is its uncertainty."[1180] And thus, while recognizing that there were "a few

[1177] Feldhahn. *Y2K: The Millennium Bug.* 115.
[1178] Ibid, 38.
[1179] Ibid, 44.
[1180] Ibid, 72.

encouraging facts,"[1181] she couched her prediction of what was likely to happen by citing the results of the Washington D.C. Year 2000 Group's member survey, referring to comments that Senator Bennett had delivered at the National Press Club, made reference to Representative Horn's report cards, and cited the predictions of Capers Jones.[1182] The sources to which Feldhahn pointed did not provide definitive statements on what would happen, and they all emphasized that there was still work being done, but even though she did not use Hyatt's term, Feldhahn suggested that what was necessary was to prepare for something akin to the "Brownout" scenario.

To put Y2K in a biblical perspective, Feldhahn did not look to Revelation, but instead looked to Genesis. Specifically to the story of Joseph, not the part about the technicolor dream coat, but Joseph's interpretation of the Pharoah's dream that explained that in Egypt there would be seven years of plenty followed by seven years of famine, and thus during the years of plenty it was necessary to store up for the coming years of famine.[1183] While such a perspective could be seen as leading to an isolationist and survivalist mindset, Feldhahn was explicit that it should lead Christians to rush to community instead of fleeing from community, for her the "Christian Response" that she had touted on the book's cover was that "*We are called to be ready to love and serve others in all circumstances*" with this call extending not just to other Christians.[1184] Feldhahn noted that many Christians had strayed from God, and had themselves been entranced by modern false Gods (including "technology"),[1185] and it would not be "unreasonable to ponder

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[1181] Ibid, 78.
[1182] Ibid, 79-87. Note: these have been discussed elsewhere in this dissertation. The Washington DC Year 2000 Group's survey, as well as Jones' report, were discussed in Chapter 2; while the comments from Senator Bennett and the report cards from Representative Horn were discussed in Chapter 3.
[1183] Ibid, 105.
[1184] Ibid.
[1185] Ibid, 140-141.

whether the Year 2000 problem might be a modern means of God's judgement."[1186] And yet by providing warnings, in much the same way as Joseph had, Y2K was not just God's wrath unfolding, but a chance for Christians to get right with God, and put their faith back in Him. Feldhahn counseled a preparedness that started with readying one's own home and family, but that saw doing this as providing the essential foundational work necessary for being capable of going out to help others.[1187]

Though Feldhahn spoke to her readers as Christians, she also addressed them as members of Churches (and members of Christian non-profits) and she warned that "the demands on their organizations are likely to increase as Year 20000 begins to impact society."[1188] Drawing on the example set by Paloma O'Riley's secular Cassandra Project, Feldhahn founded the Joseph Project 2000 which sought "to prevent and respond" to Y2K's impacts "in a biblically balanced and professional manner, glorifying God in all we do."[1189] The Joseph Project based itself in a spirit of "Christian servant leadership" and aimed to mobilize its members to pray, to prepare their churches, to organize with other local organizations (other non-profits other denominations), hold community awareness events, and above all else "respond in faith not fear, to prudently prepare not panic" and to put "all trust in our Sovereign God's abiding love, grace, and mercy to ultimately sustain us."[1190] Alongside a quote from Zechariah 8:13b—"So will I save you, and you will be a blessing. Do not be afraid, but let your hands be strong."—the Joseph Project website provided a variety of resources regarding Y2K information, family preparation,

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[1186] Ibid, 144-145.
[1187] Ibid, 157-176.
[1188] Ibid, 177.
[1189] Anonymous. "Joseph Project 2000: About." *JosephProject2000.org.* (http://josephproject2000.org/about.html: 1998); archived at *Wayback Machine* (http://web.archive.org/web/19991013081657/http://josephproject2000.org/about.html).
[1190] Ibid.

and specific advice for groups engaged in the work. And as Y2K entered the homestretch, Feldhahn wrote on the organization's website that the Joseph Project 2000 network featured some "130 chapters in 9 different countries" that were "eager to see what He is going to do in the next few months."[1191] Feldhahn noted that the members of the Joseph Project did not see Y2K as "the end of the world as we know it" but nevertheless saw it as a "risk" one "the church should be prepared to respond to as a ministry opportunity and responsibility."[1192] Yes, Y2K was serious and could cause very real disruptions that would negatively impact the lives of the unprepared, yet as Feldhahn framed the crisis "Readiness to love and serve during the next few months is nothing more than what the church should already be doing anyway."[1193]

But what if even as Y2K fell short of "the end of the world" its disruptions still rose to the level of "the end of the world as we knew it"? In an editorial posted to his website at the close of 1998, Hyatt noted that since the publication of his book *The Millennium Bug*, he would regularly be asked if had "become more optimistic or less optimistic" and though he noted "I am an optimist by nature…I don't like negative people, and I don't like gloomy reports" he had to admit that—based on things including Horn's latest report card, other government reports, and the still lackluster news coverage (even if 60 Minutes had finally covered it)—when it came to Y2K he was only becoming more "pessimistic."[1194] While outlining the three possible scenarios in *The Millennium Bug*, Hyatt had stated that he thought what would happen would fall somewhere between Brownout and Blackout, but in the months following the book's publication

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[1191] Shaunti Christine Feldhahn. "An update from Shaunti Feldhahn, founder and President of the Joseph Project 2000." *JosephProject2000.org.* (http://josephproject2000.org/Update_Nov.htm: November 1999); archived at *Wayback Machine* (http://web.archive.org/web/19991115164401/http://josephproject2000.org/Update_Nov.htm).
[1192] Ibid.
[1193] Ibid.
[1194] Michael Hyatt. "Y2K Editorial: Why I Am More Pessimistic Than Ever." *MichaelHyatt.com.* (http://www.michaelhyatt.com/editorials/pessimistic.htm: November 30, 1998); archived at *Wayback Machine* (http://web.archive.org/web/19991002175929/http://www.michaelhyatt.com/editorials/pessimistic.htm).

he seemed to be leaning towards Blackout.[1195] While Hyatt's website provided a robust set of resources, including a very detailed FAQ section, and his regular commentary in the form of updates and editorials, his true follow up to *The Millennium Bug* was his *The Y2K Personal Survival Guide* which he described as "everything you need to get you and your family from this side of the crisis to the other."[1196] And as for what "the crisis" would look like, Hyatt was "assuming at least a twelve month disruption of basic goods and services" which would include periods without power, "food shortages…bank failures…stock market crash…economic depression…widespread unemployment…civil unrest" and "No meaningful leadership from the Clinton Administration."[1197] A timeframe and a level of disruption that was much more in keeping with the dark days of his Blackout scenario, than the mild inconveniences of the Brownout scenario. Even as Hyatt continued to acknowledge that "the point of absolute certainty will never come" he was now shifting his emphasis to encouraging personal preparedness, even as he stated "There is nothing I would enjoy more than being wrong in my assessment of Y2K."[1198] Hyatt's *Survival Guide* urged readers to "begin immediately" to "work incrementally" and wherever possible to "prepare in community" (and he encouraged readers to look into both the Joseph Project and the Cassandra Project).[1199] For the most part, Hyatt's *Survival Guide* provides fairly straightforward preparation tips that are applicable to disaster preparation in general. While Y2K certainly provided the context for preparedness, Hyatt's *Guide* included advice on securing hard copies of documents, having extra food and water, having basic tools available, thinking of heat and energy sources in the case of power outages, preparing for

[1195] Hyatt. *The Millennium Bug.* 180.
[1196] Michael Hyatt. *The Y2K Personal Survival Guide: Everything You Need to Know to Get from This Side of the Crisis to the Other*. (Washington: Regenery Publishing, Inc., 1999). 3.
[1197] Ibid, 4-5.
[1198] Ibid.
[1199] Ibid, 7-8.

medical emergencies, being ready to rely on cash (or barter), and being ready to defend oneself and one's family. Though Hyatt couched some of his preparation tips in an attitude of general wisdom regarding readiness, and allusions to preparing for more typical disasters, Hyatt also noted that what made Y2K distinct from "a hurricane, which hits a specific region, allowing unaffected areas to provide assistance, the Y2K crisis will hit everywhere all at once."[1200] Where *The Millennium Bug* had stuck to a fairly secular tone, in his *Survival Guide* Hyatt leaned more heavily in the direction of religion, and while the first book in his list of "Emergency Situation How-to Books" was from the Red Cross, the second book on the list was the Bible.[1201] Echoing the comments that he had delivered in his testimony before Congress, Hyatt emphasized that "preparation is the antidote to panic," but he also noted that "God often puts us—as he did the Disciples—in a position where we are unable to meet all of our own needs, so that we may learn to trust Him."[1202] And amidst references to Luke, Isaiah, Hebrews, and Romans, Hyatt encouraged his readers to remember that God "is working all things together for good—even Y2K."[1203] Granted, God called upon people to prepare themselves, which was why Hyatt was providing such helpful advice—and for those who needed even more help, Hyatt's website also offered a way for them to order bulk survival food at an easy to stomach discount.[1204]

Despite the ominous title of *Millennium Meltdown*, the situation that Grant Jeffrey foresaw looked fairly similar to the one envisioned by Michael Hyatt—although with the very significant difference being Jeffrey's consideration of how Y2K fit within "working all things."

[1200] Ibid, 28.
[1201] Ibid, 29.
[1202] Ibid, 265.
[1203] Ibid.
[1204] Michael Hyatt. "A Personal Message About Y2K & Food from Michael Hyatt." *MichaelHyatt.com.* (http://michaelhyatt.com/food/message.htm: 1999); archived at *Wayback Machine* (http://web.archive.org/web/19991013012102/http://michaelhyatt.com/food/message.htm).

Jeffrey urged "a proper and balanced perspective," noted "The sky will not fall," and claimed "It is not the end of the world as we know it" even as his book pushed readers to reexamine "the world as we know it" through a lens of biblical prophecy.[1205] This was not to say that he was expecting something akin to the "non-scenario," indeed Jeffrey noted Y2K would "certainly be the largest and most expensive technology disaster in history" but he hedged this spectacular expectation by noting its "worst effects will only last a few months to a year."[1206] Drawing upon a familiar mix of mass media reporting, government reports, and technical experts, Jeffrey considered the Y2K implications for everything from utilities to the banks to the military to the government's computers to the impacts on individual's homes and families—and the picture was not a particularly reassuring one. Jeffrey placed a special emphasis within his analysis on the matters of interconnection—people had come to "depend upon and expect the presence of safe, reliable electrical power" and the grid itself had become "utterly dependent on extremely sensitive computer monitoring equipment";[1207] and while government computer systems were a particular mess, Jeffrey described the "ultimate problem" as the way that "governments, corporations, and individuals are so intricately interconnected by millions of hidden computer systems" such that problems in one area would cascade across the rest of the system.[1208]

In the introduction to *Millennium Meltdown*, Jeffrey had commented that in the estimation of "many scholars of Bible prophecy" Y2K looked as though it could "hasten the creation" of the conditions foretold "according to the ancient prophets of the Bible," but the first ten chapters of the book provided a secularly straightforward assessment of Y2K. Yet Jeffrey

[1205] Jeffrey. *Millennium Meltdown*. 23.
[1206] Ibid, 234.
[1207] Ibid, 67-69.
[1208] Ibid, 134.

began the eleventh chapter of his book with a block quote of Revelation 13: 16-18, regarding the "creation of a cashless society in the last days" through the introduction of the mark of the beast.[1209] Though, for the first time in history, the technology was now available to fulfill Revelation 13: 16-18, Jeffrey was well aware that the public was still hesitant to give up their cash in exchange for a cashless society of numbers; however, if Y2K led to mass bank runs as panicked people sought to withdraw their cash (thereby creating a financial crisis) this could create precisely the sort of scenario in which the partisans of the New World Order would "argue persuasively that the time has come to completely replace cash with electronic currency."[1210]

The mark of the beast was, of course, not the only condition that had been prophesized for the end of days: "The prophets of Daniel and John warned that a global world government would rise in the last days" and at its head would sit "the Antichrist, the world's last dictator."[1211] Granted, there was not much public support for the establishment of such a "global government," the only way for those "dedicated to creating a New World Order" could achieve their goal would be through "an economic, political, or military crisis of such vast proportions that no nation, on its own, could possible solve it."[1212] And Y2K provided exactly such a crisis. On a purely practical side, Jeffrey lamented how technologically enabled "stability of life in modern times" had led "many of us to feel immune to disasters" and he cautioned his readers to take rational preparedness steps in the face of the likelihood of disruptions associated with Y2K. Nevertheless, at the core of Jeffrey's assessment of Y2K was an effort to see the specific computer crisis as something more, a crisis wherein "the genuine potential dangers caused by the

[1209] Ibid, 149.
[1210] Ibid, 153.
[1211] Ibid, 164.
[1212] Ibid, 155.

failure of the world's computer systems" could create the conditions necessary for the biblically prophesized cashless society ruled over by the global government controlled by the antichrist.[1213] In *Prince of Darkness*, Jeffrey had warned that the first time in history the prophesized technologies all finally existed, all that was missing was the crisis that could lead to their introduction, and in *Millennium Meltdown* that crisis was finally at microchip embedded hand.

Jeffrey had noted that Y2K was of interest to many of those who were involved in Bible prophecy, and while some like Jeffrey thought Y2K could be a sign of the approach of the end times, others saw Y2K as a sign that the end times were already at hand. Though they did not provide the same level of buildup analysis, or the same level of detail, Hutchings and Spargimino considered Y2K as potentially having three "levels" of impact—with these correlating fairly well to Hyatt's three scenarios. And they described their third level, a meltdown style scenario, as creating the sort of "world that the four horsemen of the apocalypse would ride across."[1214] After briefly describing their three levels, Hutchings and Spargimino responded with an "I don't know" to whether such things would actually happen but hedged this uncertainty by stating that such things could possibly happen.[1215] In the unflinching assessment of Hutchings and Spargimino the Y2K crisis was a result of "the human race" having "decided not to retain God in their knowledge…The nations have made the computer their god" and thus in response "He is proving again that the wisdom of man is foolishness."[1216] It was not that Hutchings and Spargimino were denying the technical basics of Y2K, or the core reality of the problem, but that they treated the very hubris that had lead humanity to create such powerful machines while

[1213] Ibid.
[1214] Hutchings and Spargimino, *Y2K=666?* 57.
[1215] Ibid.
[1216] Ibid, 58.

overlooking the importance of two little digits as being a sign of the sort of unearned pride and the worship of false idols for which God punishes humanity.[1217]

Considering Y2K, Hutchings and Spargimino wrote "It's hard to believe that the Bible does not say anything about the Y2K problem," and as they made clear they thought the Bible actually said quite a lot "about the Y2K problem" even if "Y2K" does not appear in the Bible.[1218] In a parallel to Jeffrey's suggestions, Hutchings and Spargimino noted that Y2K could create the conditions necessary for the rise of "The new world order, with its one-world leader, the Antichrist" as this "totalitarian" regime would be seen as the only possible solution to the scale of the Y2K crisis.[1219] Out of the desire for a feeling of safety, people would turn not to God, but to Satan. Hutchings and Spargimino's comments on the antichrist were mixed with references to "globalism," "the Illuminati," "the French Revolution," "Karl Marx," "the Club of Rome," and "the United Nations" all of which were seen as being involved to varying extents in pushing for the conditions prophesized in Revelation 13: 16-18.[1220] Hutchings and Spargimino recognized that there were very real questions around Y2K, and they saw this "confusion" as creating the "need for order and stability" upon which a "charismatic leader" stating they would "unite the world" could cement power as people concluded that "bondage will be better than anarchy."[1221] And amongst the allusions to Revelation 13 and concerns about a crisis providing the opportunity for the antichrist, the most interesting move made by Hutchings and Spargimino connects quite directly to Y2K computer failures. In considering the final battle, Hutchings and Spargimino note that many "Bible commentators" have debated why it is that the weapons

[1217] Ibid, 59.
[1218] Ibid, 65.
[1219] Ibid, 66.
[1220] Ibid, 68.
[1221] Ibid, 72.

mentioned in the final battle are "horses and primitive weapons."[1222] Participants in the debate had come down on two sides: either those "primitive weapons" were the ones described as they were the weapons familiar to the writers of those prophecies, or those descriptions of "primitive weapons" were a literal statement about the weapons to be used in the final battle. And here, Hutchings and Spargimino make an impressive move of analysis as they argue that "The Y2K problem may provide a possible answer" to the question of "why the usage of primitive weapons in the future?" namely "*Because modern weapons won't work*" as Y2K related "computer glitches" cause "modern weapons" to "break down and not function."[1223] Thus, a scenario in which Y2K causes meltdown level calamity, appears as the answer to one of the Bible's riddles.

For Hyatt, as well as Hutchings and Spargimino, the idea that nothing much might happen was unworthy of attention—therefore, Hyatt had not bothered to sketch out the "nonscenario" and Hutchings and Spargimino had not included a "level zero" in their Y2K estimates. In speaking of the "nonscenario," Hyatt noted that with a very few exceptions "I have not come across anyone who thinks the Year 2000 Problem is pure hype or that all the computers will get fixed in time."[1224] And yet there were some within the Christian community (as well as outside of it, of course), who did not dismiss of Y2K as "pure hype" and who acknowledged that not all things would "get fixed in time" but who still maintained that the most likely scenario was actually the "nonscenario." Here it is certainly somewhat the case that a time component was in play, as some of those who were arguing for the "nonscenario" were literally writing their books later, and thus had access to more optimistic assessments. Nevertheless, as Hyatt's website and

[1222] Ibid, 74.
[1223] Ibid, 75.
[1224] Hyatt. *The Millennium Bug.* 161.

Survival Guide suggest, having more time and more evidence of work being done was not necessarily enough to convince everyone that their grim predictions were overstated.

Amidst all the hubbub about Y2K, Hank Hanegraaff—a Christian broadcaster, author, and President of the Christian Research Institute—acknowledged that "There is a *Panic* among the Christian brethren because of the Y2K problem."[1225] But rather than join in on that "panic," Hanegraaff sought, as the title of his book playfully put it, to "debug" the issue. While some had made it their mission to convince others of the seriousness of Y2K, Hanegraaff's focus was not so much on Y2K as on some of those Christians he accused of sensationalizing the crisis. And Hanegraaff did not hide his criticisms behind clever pseudonyms, he called people out by name, as Hanegraaff put it: "Perhaps no one has been more successful in selling fear than Michael Hyatt,"[1226] "sensationalists like [Grant] Jeffrey,"[1227] and Hanegraaff expressed frustration with prominent Christian figures who had lent their platforms (and some of their credibility) to figures like Hyatt and Jeffrey. In Hanegraaff's estimation, the various "sensationalists" he was lambasting were "incorrectly warning people about impending doom on the basis of sloppy journalism," as he criticized people for falling for fallacious accounts or panicking over minor stories, "sophistry," as he accused these individuals of willful misrepresentation and exaggeration, "and Scriptorture" as some Christians were "torturing" Biblical texts to make them appear as though they prophesized Y2K.[1228] Hanegraaff was not denying the reality of Y2K, and he pointed to government reports to acknowledge the seriousness of the problem while also noting those reports were not predicting the apocalypse. Citing FEMA's reassurance "that we're

[1225] Hank Hanegraaff. *The Millennium Bug Debugged: The Facts Behind All the Y2K Sensationalism.* (Minneapolis: Bethany House Publishers, 1999). 13.
[1226] Ibid, 41.
[1227] Ibid, 69.
[1228] Ibid.

not going to have massive disruptions but we may have some local disruptions," Hanegraaff encouraged his readers to have supplies on hand just in case, but he couched this advice in reference to FEMA's basic (non-Y2K specific) advice that "all households" should have "a disaster kit with enough supplies to last at least three days."[1229] Hanegraaff shows a certain disdain for those who were "scriptorturing" the Bible to help them sell fear, and though Hanegraaff noted "we are not to take Scripture in a wooden literal sense,"[1230] there were some within the dispensationalist community who shared Hanegraaff's wariness.

Similar to Hanegraaff, Dave Hunt endorsed the "nonscenario" while heavily criticizing Hutchings and Spargimino, Jeffrey, Hyatt, Feldhahn, and their ilk.[1231] From the outset, Hunt made clear that he was not denying the seriousness of Y2K, but he emphasized "the problem is well known and so is the solution that is being effected right now."[1232] Recognizing the presence of all the gloomy premonitions, Hunt noted that such worst case scenarios "*could* occur only *if* millions of hardworking and intelligent people fail to do their jobs," and rather than provide a litany of woe, Hunt quoted from media sources emphasizing that the work was being done.[1233] While figures like Senator Robert Bennett and Peter de Jager were frequently cited by the alarmists, Hunt drew attention to the fact that as 2000 drew closer Bennett and de Jager were both striking a more guardedly optimistic tone.[1234] Yet, Hunt's focus was on pushing back against the "mass hysteria" that seemed to have enveloped so many of his fellow Christians, and in a pointed barb at least partially directed at Feldhahn's Joseph Project Hunt stated "God has shown no one what will happen regarding Y2K" in contrast to the project of the Biblical Joseph

[1229] Ibid, 100.
[1230] Ibid, 91.
[1231] Hunt. *Y2K: A Reasoned Response to Mass Hysteria.* 131.
[1232] Ibid, 6.
[1233] Ibid, 60.
[1234] Ibid, 63.

that had been a direct response to a warning from God.[1235] An established figure within the world of Bible prophecy, Hunt warned against the temptation to try to force Y2K to fit within prophecy, and went so far as to state that "Y2K is not and cannot be a fulfillment of Bible prophecy."[1236] Hunt considers the same passages from Revelation 13 that so fascinated others, and while he also saw the computer to be key to the fulfillment of the mark of the beast, this led Hunt to note that clearly "Antichrist *needs* computers" and thus if Y2K were to cause widespread computer failures this would seem to be a setback not a fulfillment of Revelation 13.[1237]

While Hunt and Hanegraaff, among others, endorsed the view that Y2K would wind up being a "nonscenario," there was something more than a willingness to believe the governments somewhat vague assurances at work. There was also a real worry about how Y2K was making Christians look. Though there were some figures, like Feldhahn, who thought that Y2K provided an opportunity for Christians to witness and proselytize, spreading the "Good News" as they helped their unsaved neighbors navigate the bad news—Hunt and Hanegraaff were more worried that Y2K was making Christians look like fools. Hanegraaff was clearly less than thrilled by the "unflattering picture of Christian leaders" painted by *Time Magazine's* January 18, 1999 cover story, and the similar way an article in *Esquire* had "used Y2K to satirize Christianity as a pathetic subculture desperately seeking validation."[1238] Hunt shared Hanegraaff's frustration with that issue of *Time Magazine*, which (as was discussed in Chapter 4) as Hunt put it "displayed on its cover a fanatical 'Christian' dressed in a long white robe and wearing a placard," Hunt saw that article as "a spoof on Christian concern" and as further proof that "the secular world was

[1235] Ibid, 155.
[1236] Ibid, 167.
[1237] Ibid, 177-179.
[1238] Hanegraaff. *The Millennium Bug Debugged.* 16-18.

stepping up its ridicule of the church for its handling of this subject."[1239] And though Hunt was clearly aggravated by the public perception of Christianity, he seemed much more anxious about how Y2K might impact the faithful. Should Y2K disruptions fail to achieve "Brownout" or "Blackout" status, Hunt feared "the failure of doomsday predictions" could "create a reaction against Bible prophecy" and worse contribute to "the spiritual delusion which is already building to a climax worldwide."[1240] Those who, out of fear of Y2K drew close to the Church might grow resentful of those who had "persuaded them to take unnecessary measures in preparing at great cost in money, time, and energy for something that never happened."[1241] And perhaps worst of all the defeat of Y2K could be "taken as proof that mankind can indeed solve all problems," and all of this might only "add to the triumph not only of technology over Apocalypse but over Christianity."[1242]

The range of Y2K scenarios provided an opportunity to project a mixture of hopes, fears, and hopeful fears onto the crisis: it could be a chance to demonstrate Christian charity, bring about the fall of a decadent modernity, provide clear evidence that Biblical prophecies were being fulfilled…or it could wind up draining faith from God by leading to even more faith being invested in the computer. Despite the way that some media coverage of Y2K, such as the aforementioned *Time Magazine* cover story, tried to paint Christians with a broad brush, there were very significant disagreements amongst Christians about Y2K. And when it came to the specific matter of Y2K, they were pointing to sources other than just the Bible to justify their concerns.

[1239] Hunt. *Y2K: A Reasoned Response to Mass Hysteria.* 268.
[1240] Ibid, 197.
[1241] Ibid, 259.
[1242] Ibid, 260.

The Facts and The Fictions

Despite the fact that most utilities had continued functioning normally when 1999 became 2000, by January 6 there had still been enough serious disruptions to at least somewhat vindicate the doomsayers. True, the grid had not failed, but the sporadic problems had forced companies to ration services, such that the services that had once always been available with the flick of a switch or turn of a nob, were now only available about half the time. Stores had been able to muddle through, and could keep the basic necessities on their shelves, but just barely, and long lines outside of stores had become common. Granted, that was only if people could afford anything once they got into the stores, as a serious worldwide recession (including a major stock market crash and several banks failing) was hitting hard. Martial law had been declared to maintain order and to prevent chaos, and the liberties guaranteed by the constitution were hard to find in the year 2000. And if Americans might lament what Y2K had done to them and their lives, they could still count themselves lucky compared to most of the people in Africa, South America, and Asia who had fallen into darkness, while much of Europe was teetering on the brink. A great deal of work had gone towards fixing Y2K, but it had been insufficient, had largely overlooked the problem represented by embedded chips, and thus the celebratory cheers that had greeted the start of 2000 quickly turned to woeful dirges.

At least this is how Michael Hyatt, joined by co-author George Grant, described the early days of the year 2000 in their 1998 novel *Y2K: The Day the World Shut Down.*[1243] For those

[1243] Michael Hyatt and George Grant. *Y2K: The Day the World Shut Down.* (Nashville: Word Publishing, 1998). 205-207.

seeking to make sense of what Y2K might bring there was an overwhelming quantity of facts to accumulate, collate, sift through, and on which to base projections. And yet the facts were constantly changing, being updated according to new progress reports and exposes, and thus attention to the facts alone could not really do the thing that was most desired: draw up an image of what was actually going to happen. Elected officials and technical professionals may have been wary to extrapolate from the information they had at hand to spin out a tale of what the final days of 1999 and the early days of 2000 might look like—but this hesitancy was not shared by all. As was discussed in the previous chapter, there was the Y2K made for television movie, as well as the Simpsons' Y2K Halloween special, but there were other attempts to fictionalize Y2K. In some of these cases, Y2K appeared as fodder for a fairly standard thriller narrative, or a bizarre humorous tale aimed at young readers—but in still other cases those who were penning Y2K related fiction were the very same people writing serious warnings about Y2K. Hyatt had stated that he believed Y2K would likely fall somewhere between the "Brownout" and "Blackout" scenario and in *Y2K: The Day the World Shut Down* he described what that would look like. Similarly, Grant Jeffrey, writing with Angela Hunt, concocted a narrative in which the Antichrist truly attempts to use Y2K as an opportunity to seize power in *Flee the Darkness*.[1244] Shaunti Feldhahn had mixed in a fictional "what if?" style narrative alongside her fact based chapters in her book *Y2K: The Millennium Bug*—there, and also in her wholly fictional *Y2K: The Millennium Bug, Youth Edition*[1245]—wherein moderate Y2K related disruptions push the Christian protagonists to meet the challenges of Y2K through faith. The novels by Hyatt and Grant, and Jeffrey and Hunt, are best described as Christian thrillers, though the book by Jeffrey

[1244] Grant R. Jeffrey and Angela Hunt. *Flee the Darkness: A Novel.* (Nashville: Word Publishing, 1998).
[1245] Shaunti Feldhahn. *Y2K: The Millennium Bug, Youth Edition.* (Sisters: Multnomah Publishers, 1999).

and Hunt is much more explicitly religious than the book by Hyatt and Grant; whereas Feldhahn's fictionalization provides a less bombastic account of Y2K disruptions (her book doesn't feature any car chases or kidnappings). In their nonfiction writing on Y2K, these figures had endeavored to carefully connect their claims to factual reporting, yet with the protective shield of fiction they were able to push even further.

Feldhahn's narrative begins in New York in February 2000, with a well-to-do business woman cursing "the moronic computer nerds" as she makes her way through a city that "no longer was a playground for her and her affluent friends," even as uptown in the Bronx a doctor is brought to tears by the sights at the Bronx Good Shepherd Center that give testament to "the reality of God's tender care for his people."[1246] The cast of characters includes the aforementioned business woman and Christian doctor, a woman who runs a small regional grocery chain, a woman struggling to provide for her two children, and various couples involved with their churches. The characters' lives intersect at various points, but the overall narrative is one in which people become aware of the potential danger of Y2K, do (or do not) take steps to prepare for it, and then live with the consequences. In some cases, such as that of Becky Lee—a Christian woman running a regional grocery chain in Illinois—the recognition that so few others are preparing for Y2K appears to her as a chance to use Y2K to grow her business. Meanwhile much of the narrative focuses on various churches, such as Grace Chapel, that are busy setting up pantries and other services for those who might be in need—people such as Deborah Carey, who after initially struggling to find sufficient support, even with the help of Jim and Courtney Thicke's church, eventually finds the support she needs from a Mormon group. The Y2K disruptions that take place in Feldhahn's narrative are largely of the "Brownout" variety, and

[1246] Feldhahn. *Y2K: The Millennium Bug.* 13-15.

though there are references to crime and serious problems, Feldhahn keeps her focus largely on Christians who had prepared. Fast-forwarding to March 2001, Feldhahn describes how Grace Chapel (the community with which Becky Lee is involved) was able to grow tremendously thanks to their Y2K ministry, leading the pastor there to note "*The world is finally seeing CHRIST rather than Christians*."[1247] Similarly, the Bronx Good Shepherd Center with which the book opens becomes a site of literal miracles of healing. Granted, March 2001 is framed not only as triumph for those who adequately prepared, but as a warning to those who do not—after Deborah Carey tells Courtney Thicke that she has started going to a Mormon Church, Courtney tries "to explain some of the differences between Mormon beliefs and those of orthodox Christianity" but she is met with a sharp rebuke from Deborah who states "*Your* church didn't care whether I lived or died"—with the clear implication being that Courtney has in some way failed.

While the main version of *Y2K: The Millennium Bug* alternated between fictional and non-fictional chapters, in the youth edition of the book Feldhahn stuck entirely to a fictional narrative.[1248] What sets the youth edition's narrative apart from the adult edition's narrative is that in the youth narrative all of the main characters are high school students—albeit a group of Christian high-school students who decide to organize a Y2K club of sorts. The age of the characters provides more opportunities for explanations of Y2K that result in exclamations of the sort like "Wow, I didn't realize how much we have become dependent on things that we didn't even *have* a hundred years ago!"[1249] But the basic arc of the youth edition is similar to the adult edition: a fairly straightforward Y2K narrative that emphasizes preparedness as the best

[1247] Ibid. 152. Italics and capitalization in original text.
[1248] Feldhahn. *Y2K: The Millennium Bug, Youth Edition.*
[1249] Ibid, 72.

strategy—the church to which the characters belong literally starts "a Joseph Project 2000 group"[1250]—while treating it as an opportunity to evangelize. To the extent that the youth edition has a villain it is not the millennium bug itself but an "anti-Christian" high-school principal who reprimands one of the students for her Y2K work.[1251] Nevertheless, the triumph that occurs in the youth edition narrative is not that the students are prepared when Y2K disruptions hit, but that their preparations allow them to provide support to the unprepared "anti-Christian" principal that ultimately leads him (and his son) to give "their lives to the Lord."[1252] The fictionalized accounts of Y2K that Feldhahn provides feature serious Y2K wrought disruptions, largely in keeping with a "brownout" scale incident, yet the narratives focus on people heeding the warnings (to greater or lesser extents) and having their faith rewarded, unlike other fictionalized versions placed Y2K in a bit more of an action movie framework.

By way of contrast: *Flee the Darkness*, Grant Jeffrey and Angela Hunt's Y2K novel, begins with a conversation between the antichrist and the German general who is doing his bidding that makes it clear that Y2K is just part of a much larger plot. At the center of *Flee the Darkness* is Daniel Prentice, a talented tech entrepreneur whose company figures out a comprehensive Y2K fix in the waning days of 1998.[1253] Despite the fact that his mother is a Christian, as is Lauren Mitchell the assistant to the President that he falls in love with (in this narrative President Clinton had lost the 1996 election to a God-fearing Republican), Daniel shows little interest in religion for the bulk of the book. Which is how he finds himself unthinkingly taking steps that pave the way for the ascent of the antichrist and the fulfillment of

[1250] Ibid, 97.
[1251] Ibid, 87.
[1252] Ibid, 154.
[1253] Jeffrey and Hunt. *Flee the Darkness.* 13.

prophecies from Revelation. Daniel's company concocts a technical fix for Y2K, but the challenge this then presents is how to ensure that all of the world's computers will administer that fix—in a meeting with the US government Daniel tells the assembled officials "You'll have to pass a law, no doubt, to make the fix required" but Daniel does not stop there.[1254] Instead, Daniel goes on to propose that the time has come to "merge all your computer systems into one" and he pushes for "a national network to control the exchange of currency, monitor health, and regulate the economy."[1255] And the way to make all of this work will be to make it so that "raw data" can be "stored…on the back of each individual's hand" in the form of a "Personal Identification Device, or PID."[1256] Furthermore, though the technology has been around for some time, Y2K provides the opportunity to push this change through: "we tell the American people the truth about the Year 2000 Crisis and ask them to come forward for their PIDs."[1257] The anxiety about Y2K, and the eagerness for Daniel's programming solution, creates the ideal conditions for which the US, and much of the world, starts connecting all of its computers and microchipping all of their people. And though there are some, like Daniel's mother, as well as the first lady who warns that the PID plan is similar to "a prediction found in the book of Revelation chapter thirteen,"[1258] for the most part the plan goes forward remarkably quickly. Gradually Daniel realizes that something far larger and more nefarious is at work and that his well-meaning technological solutions are being deployed for darker ends by the charismatic Adrian Romulus who heads the newly formed European Consortium. There are assassination attempts, mysterious rabbis, chases, torture, and a desperate race against time as Lauren and

[1254] Ibid, 68.
[1255] Ibid, 71.
[1256] Ibid, 72-73.
[1257] Ibid, 74.
[1258] Ibid, 82.

Daniel try to prevent Romulus's plans from coming to fruition. In the final act of the novel, Daniel comes to accept that Romulus is the antichrist, he becomes a believer himself, and he and Lauren interrupt Romulus's televised address to out him as the antichrist and warn those (many of whom have already been microchipped) against the technological dangers literally at hand. *Flee the Darkness* does not feature a "brownout" or "blackout" scenario, indeed within the book Y2K is fixed by the end of the second chapter—instead the significance of Y2K for the plot is that it provides a crisis that allows for the fulfillment of biblical prophecy and the ascent of the antichrist. And though the book ends with Daniel and Lauren having thwarted Romulus's plans, there is a larger sense in which the antichrist has only been defeated for now.

The antichrist does not make an appearance in Michael Hyatt and George Grant's *Y2K: The Day the World Shut Down*, but unfortunately for the characters involved Y2K itself makes a rather unwelcome appearance. When Bob Priam, the Chief Information Officer at a Fortune 1000 company, tries to tell his boss about the scale of the problem they're facing and how much it will cost to fix it he is rather unceremoniously fired.[1259] And though this sends Bob and his family for some initial rough times, their faith sustains them until Bob realizes that his technical knowhow makes him ideally suited to capitalize on the rising concerns about Y2K, and he is able to reestablish himself as a successful Y2K consultant. Though Bob "was no reactionary" and "didn't have an alarmist bone in his body" as the year 2000 draws closer he becomes increasingly worried that, despite his best efforts, not enough will be done to fix the problem in time.[1260] By December 1998, Bob is growing increasingly worried, frightened by the possibility that Y2K might take out the electric grid, and anxious that "There are no low-tech alternatives if

[1259] Hyatt and Grant. *Y2K: The Day the World Shut Down.* 30.
[1260] Ibid, 160.

our high-tech information systems fail in 2000."[1261] Thus, Bob pushes his family to adopt a "grandma strategy" that emphasizes self-reliance while choosing to get his family to the secluded safety of a more rural place.[1262] And it is a good thing Bob did so, for October of 1999 brings a major economic crash, and then January 2000 features a world wherein "Life had taken a dramatic turn for the worse. And there was no indication that things would be able to return to normal any time soon."[1263] Bob had devised a solution that would have handled the embedded chip problem, but he had "developed it so late in the game" when there "wasn't enough time to get the word out."[1264] And out of a desire to get that solution, one of Bob's competitors raids his homestead and kidnaps his daughter—though she escapes and is reunited with her family. Beyond Bob, *Y2K: The World Shut Down* also features an untethered young man searching for meaning, an iconoclastic educator who warns that modern society is bound to be undone by its own decadence, and a group of Y2K consultants who are using Y2K as an opportunity to insert their own backdoors into their clients' computers (it is this group that winds up kidnapping Bob's daughter). When Y2K hits despite the best efforts of people like Bob, something between the "brownout" and "blackout" occurs, and though there is widespread destruction and disruption, at the book's end as Bob "walked in his garden, there was an evident bounce in his step…he was as content as he had ever been."[1265] For the world that Y2K disrupted was already such a fallen one that the destruction Y2K caused provided a new foundation upon which people of faith and self-reliance could build.

[1261] Ibid, 186.
[1262] Ibid, 191. "the grandma strategy" that is alluded to consists of "get out of debt, keep a productive garden, have some food on hand in case of a storm, learn how to tend sicknesses at home, be able to defend yourself, have some basic tools around and the skills to use them, have a good contingency plan if times get tough, save up for a rainy day, and simplify your needs."
[1263] Ibid, 206.
[1264] Ibid, 213.
[1265] Ibid, 267.

The fictionalized version of what Y2K would bring that appeared in *Flee the Darkness*, *Y2K: The Day the World Shut Down*, and across the versions of Feldhahn's *Y2K: The Millennium Bug* were clearly providing fantastical forecasts, and yet these narratives still made sure to point back to factual sources. Before the narrative of *Flee the Darkness* is wholly overtaken by the plotline regarding the antichrist there are mentions of the computer programmer Bob Bemer's efforts to design a Y2K fix, the Report Cards issued by Representative Horn get a mention, as do the cost estimates from "the respected Gartner consulting company."[1266] Grounding the risks in their novel, Hyatt and Grant cite (among others): the computer science professor Howard Rubin's commentary, the initial segment of *60 Minutes* that covered Y2K, the Congressional testimony of the economist Edward Yardeni, and the Report Card where Representative Horn presented the government's efforts with an F.[1267] Given the extent to which, at least in the adult version of her book, Feldhahn moved back and forth between fictional narrative and straightforward account there was slightly less need to drop in various facts, nevertheless the *Youth Edition* also features a clear reference to the November 1998 Report Card issued by Representative Horn.[1268] In all three of these cases, the narratives being presented were in line with what their authors were simultaneously dreading and hoping for as was reflected in their non-fiction accounts: that Y2K disruptions would provide an opportunity for a renewal of Christian faith, that Y2K would break down a decadent society and reward those who had prepared, or that Y2K would be a clear step on the road towards the biblically prophesized end of days. And in making their various cases, it is noteworthy that Feldhahn, Hyatt, and Jeffrey all drew upon the Report Cards issued by Representative Horn.

[1266] Jeffrey and Hunt. *Flee the Darkness.* See pages: 11, 28, and 30.
[1267] Hyatt and Grant. *Y2K: The Day the World Shut Down.* 76, 111, 168, 182.
[1268] Feldhahn. *Y2K: The Millennium Bug, Youth Edition.* 110.

On the occasion of the release of the 1997 Report Card, in a press release, Representative Horn stated "These grades will inform both leaders and the public of how well the Federal Government is preparing for a technological pitfall of unknown proportions," to which he added that he hoped these grades would "also inspire some very serious attention to the problem in places where progress is currently lacking."[1269] And the way the Report Cards were taken up by figures like Hyatt, Feldhahn, and Jeffrey makes it clear that the grades did "inform…the public" and also "inspire some very serious attention." Indeed, commenting on the state of preparedness (or lack thereof) shown by the Department of Energy, Department of Defense, and the Internal Revenue Service, Feldhahn noted "we should be as concerned as they are about their lagging readiness" before reproducing in a large block the grades from Horn's August 15, 1998 Report Card—one which saw an overall grade of a D, with many departments (including Energy and Justice earning Fs).[1270] In outlining "The Problem with the Government's Computers," Jeffrey begins by noting that the US government is in even worse shape than much of the business sector before noting that in 1997 Horn had assigned a grade of D; however, Jeffrey does not stop there.[1271] Indeed, he considers the work Horn has continued doing and emphasizes that over the course of the tracking that has gone into these "quarterly report cards" that "every quarter the government fails to meet the necessary standard required to solve the problem before the disaster hits," shortly after which Jeffrey provides Horn's May 1998 Report Card—the one in which the federal government earned an F.[1272] In *The Millennium Bug*, Hyatt includes a chart in which he

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[1269] U.S. Congress. House. Subcommittee on Government Management, Information and Technology of the Committee on Government Reform. "Horn to Announce Grades on the Year 2000 Problem." (http://www.house.gov/reform/gmit/press/p970910.htm: September 10, 1997); archived at *Wayback Machine* (http://web.archive.org/web/20000816223621/http://www.house.gov/reform/gmit/press/p970910.htm).
[1270] Feldhahn. *Y2K: The Millennium Bug.* 85.
[1271] Jeffrey. *Millennium Meltdown.* 113.
[1272] Ibid, 114-116.

puts Horn's 1996 grades right alongside Horn's 1997 grades in order to clearly demonstrate that "By December 1997 things had become even worse," emphasizing that according to Horn's subcommittee fourteen of the federal agencies listed on the report card "will not be successful in repairing their mission-critical applications" on time.[1273] And in his *The Y2K Personal Survival Guide*, Hyatt returned to Horn's report cards, not as a demonstration of progress being made, but as proof that the situation was just getting worse—where he had previously compared 1996 and 1997, now Hyatt was pointing to Horn's Report Cards from the close of 1998 at which point "seven agencies earned a grade of 'D' or 'F'…only two agencies can claim 100 percent compliance of its mission critical systems."[1274] And Hyatt quoted Horn's own words that "This is not a grad you take home to your parents, and it is definitely not a grade to take home to the voters and taxpayers."[1275]

To be clear, Horn was hardly the only source of information upon which these religiously oriented Y2K writers drew. And were Horn their only source for ominous information, these figures would have had a harder time building their cases for the severity of Y2K. Luckily for them, they had no shortage of other figures within the government, from the media, and from the actual technical community to draw upon. Alongside, Representative Horn, Senators Bennett and Dodd (the chairs of the Senate Special Committee on the Year 2000 Problem) were routinely cited: Feldhahn quoted extensively from Bennett's comments at the National Press Club on July 15, 1998,[1276] Hutchings and Spargimino quoted Dodd's view that it wasn't a matter of "whether

[1273] Hyatt. *The Millennium Bug*. 109-111.
[1274] Hyatt. *The Y2K Personal Survival Guide.* 281.
[1275] Ibid.
[1276] Feldhahn. *Y2K, The Millennium Bug: a Balanced Christian Response.* 83.

or not there will be any power disruptions" but "how severe,"[1277] Hyatt quoted those same words from Dodd while also quoting Bennett's comment that "there is a virtual certainty that we'll have brownouts and some regional blackouts, [1278] and Jeffrey referred to Bennett as "one of the most well-respected authorities in the U.S. government concerning the Y2K crisis" before quoting Bennett ominously warning that "The two-thousand problem lies at the heart of our economy."[1279] Jeffrey also reproduced in full, Senator Moynihan's open letter to President Clinton from 1996 that had urged Clinton to take action, made reference to the Congressional Research Service's report, and had featured the grimly evocative lines about the computer becoming the "curse of the age."[1280] Though these figures were steeped in the world of Christian broadcasting and publishing, they drew on the reporting from outlets like *CNN*, *The New York Times, The Washington Post*, *Newsweek*, and *60 Minutes* to further build the case that Y2K was a mainstream concern. Furthermore, beyond the government officials and media coverage, these religious writers also drew heavily upon experts from within the IT community. Peter de Jager, Capers Jones, Leon Kappelman, and Edward Yourdon—figures whose work on Y2K was discussed in Chapters One and Two of this dissertation—are all drawn upon frequently by religious commentators on Y2K. Furthermore, these religious writers took extra efforts to emphasize the technical bonafides of these sources, by way of example: Jeffrey repeatedly referenced "one of the most knowledgeable and respected consultants on the Year 2000 Crisis, Edward Yourdon" called Capers Jones "a brilliant software consultant" described Peter de Jager as "one of the world's foremost consultants on the Y2K problem" and lauded "Professor Leon

[1277] Hutchings and Spargimino. *Y2K=666?* 19.
[1278] Hyatt. *The Y2K Personal Survival Guide.* 275.
[1279] Jeffrey. *Millennium Meltdown.* 44.
[1280] Ibid. 121-122.

Kappelman" for his work heading the Year 2000 Working Group of the Society for Information Management. [1281] Similarly Feldhahn referred to de Jager as "the world's foremost expert on Y2K," described Yourdon as "a longtime giant in the programming area," and called Jones "the highly esteemed chairman of Software Productivity Research."[1282]

Though some people took to fiction as a way of describing what Y2K might bring, they did not need to rely on fictional sources for providing the foundation upon which those worries were based. The rich quantity of reputable sources—from the government, from mainstream news outlets, from notable people within the IT community—provided those who saw Y2K through a religious lens with plenty of material to justify their concerns. True, the government reports and technical professionals were unlikely to speak in terms of the Book of Revelation or to openly treat Y2K as an opportunity for proselytizing, but what those government reports and technical professionals supplied was a sober outlining of the true dangers of the scenario which then provided religious figures with outlines that they could then color in as they saw fit. While convincing others of the seriousness of Y2K still represented a serious challenge, in works by the likes of Feldhahn, Hyatt, and Jeffrey what can be seen is that for the work of making the case that Y2K was serious they were able to cite more authoritative sources. Thus, the position was not one of, "let me, a teacher of biblical prophecy convince you of the seriousness of Y2K" but rather a position of "let me, a teacher of biblical prophecy present you with ample secular sources that show that people in the government and IT are very serious about this…and then let me tell you why this also matters from a biblical perspective." Rather than having to shoulder the entire weight of concern, it was far easier to assume a position of saying that one was concerned

[1281] Jeffrey. *Millennium Meltdown*. 30, 50, 53, and 119.
[1282] Feldhahn. *Y2K, The Millennium Bug: A Balanced Christian Response.* 34, 40, 69.

because the experts were also concerned. After all, it might be one thing to dismiss of the worries of that one member of the Church who was always a bit anxious, but much harder to simply shrug at the worries of Congress members, highly respected technical professionals, and mainstream news outlets. And to the extent that a certain distrustful attitude towards the government (especially when a Democrat was in the White House) permeates many of these works, the fact that there was bi-partisan worry (in the Senate) and Republican criticism of a Democratic administration (Representative Horn), those government pronouncements achieved additional credibility.

Nevertheless, for all of their careful attention to reputable Y2K sources, there was still an effort to make Y2K fit within a particular narrative and worldview. Government, media, and IT sources were useful, and they were used, but this was done primarily in a way that fit within other assumptions. Having set their hopes and fears on particular scenarios along the "brownout, blackout, meltdown" continuum, it became necessary to then elevate the sorts of comments that would bolster that prediction. A major blessing and burden in this area was the speed with which information around Y2K changed, such that the position someone had held regarding Y2K in 1998 could have shifted dramatically by late 1999. Horn's report cards are an excellent example of this—for a book could include commentary on bleak moments in the report cards (as was noted in Chapter Three of this dissertation, the report cards from 1998 were quite bad), but by the time that book was published and read the overall grades could be showing definite signs of improvement. And though there were many figures within the IT community who initially had rather grim assessments, many of them had significantly brightened their outlook by the waning days of 1999 (de Jager, for example)—granted, some notable IT figures maintained a fairly foreboding perspective (Yourdon, for example). Hyatt had dismissed of a "bump in the road"

style scenario as being so unlikely as to be deemed a "non-scenario"—yet (as was discussed in Chapter Two) that was the sort of scenario many in the technical professions wound up expecting.

Yet in all of this what emerges strongly is the challenge of uncertainty. For those lacking in rigorous IT training and not privy to internal government documentation, they were left in a scenario where what they needed to do was try to make sense of the conflicting and unclear messages that were being offered by sources in the government, media, and from the IT sector. Horn had hoped that the simple grading schema would convey a clear message, but it also served to create a lot of worry and uncertainty. Similarly, the reports issued by the Senate's Special Committee took such care to not make a definitive statement as to make it impossible to really know what was happening. Responding to his own question of "what's it going to be: brownout, blackout, or meltdown?" Hyatt spun the question back around to the hypothetical asker to state "Again, I want to reiterate that *I don't know* and neither does anyone else" before citing Senator Bennett's less than reassuring comment that in terms of the framing of Y2K as either "end of the world" or "no big deal" that "both approaches are wrong."[1283] And yet as figures like Hyatt, Feldhahn, Jeffrey, and many others argued—there is a lot of space between "end of the world" and "no big deal" and it can be challenging to know how to prepare given so much uncertainty. Yet, even as they faced all of this uncertainty about Y2K, many of these religious groups were able to find solace and guidance in their faith.

Cassandra's Projections

[1283] Hyatt. *The Y2K Personal Survival Guide.* 286.

A little less than a year after testifying before the House, Paloma O'Riley of the Cassandra Project, found herself testifying at a government hearing again—this time before the Senate Special Committee on the Year 2000 Problem.[1284] The Senate hearing at which O'Riley was testifying was on the topic of community preparedness for Y2K, with the hearing being split into two components: the first, speaking to advocates for community preparedness (such as O'Riley), and a second panel focused more closely on the role of the media in covering the crisis. And O'Riley was not there to tell the Senate Committee that in the time since her testimony before the House, all of her concerns had been assuaged.

From the outset, Senator Bennett struck a guardedly appreciative note towards the groups and individuals advocating for more community preparation, stating that "Y2K requires an insurance policy against its unforeseen consequences" although to this he added that such an "insurance policy comes in the form of reasonable preparation, with the emphasis on reasonable."[1285] And in explaining what he meant by "reasonable," Bennett noted "I am not a doomsayer" though a few moments later saw fit to add "I am not a Pollyanna."[1286] In his own introductory remarks, Senator Dodd struck much the same position, highlighting that given how "pervasive" the problem was, that "the only and best way to properly deal with it is to be prepared on an individual basis within our respective communities and neighborhoods."[1287] Dodd

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[1284] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Community Preparedness: Is There News They Can Use?* 106th Cong., 1st sess., May 25, 1999. Please note: the transcript of this hearing was not available; however, the components of it are still archived on the Committee's website and accessible with the *Wayback Machine.* Therefore, appropriate links to specific testimony will be presented for this hearing as links.
[1285] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Community Preparedness: Is There News They Can Use?* "Senator Robert F. Bennett, Chairman: Opening Statement." (http://www.senate.gov/~y2k/hearings/990525/st990525bennett.htm: May 25, 1999); archived at *Wayback Machine* (http://web.archive.org/web/20001007081624/http://www.senate.gov/~y2k/hearings/990525/st990525bennett.htm).
[1286] Ibid.
[1287] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Community Preparedness: Is There News They Can Use?* "Senator Christopher J. Dodd: Opening Statement."

warned that there were "con artists" out there who were preying on people's fears about Y2K in order to line their own pockets, but Dodd played the Special Committee's leitmotif that "No one really knows how bad the problem will be until we actually get there."[1288] And in looking to the work being done by community groups, Dodd noted that they reminded him of the "Block Captains" who had been tasked with "preparing their neighborhood…in the event of an enemy attack" during World War II, and Dodd noted that even though the feared "attacks never came" these groups were "still a useful tool to allay fears and provide support during a time when the unthinkable was a real possibility."[1289] Granted, as many of those gathered to testify that day—and many others who submitted testimony for the record were to attest—there were quite a few who felt that with Y2K another version of "the unthinkable was a real possibility."

O'Riley began her testimony by thanking Bennett and Dodd for their leadership on Y2K, and acknowledging that when it came to issues like Y2K it was easier to bury your head in the sand than to be willing to be one of the few "sticking your neck out."[1290] But these initial words of gratitude, were to be some of the few kind words that O'Riley would give for what the government had done thus far on Y2K. In comments that were fairly in line with Bennett and Dodd's own paeans to preparedness in the face of uncertainty, O'Riley couched her testimony in a clearly stated position that "The one indisputable fact about Y2K is that no one knows what

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(http://www.senate.gov/~y2k/hearings/990525/st990525dodd.htm: May 25, 1999); archived at *Wayback Machine* (http://web.archive.org/web/20000823182206/http://www.senate.gov/~y2k/hearings/990525/st990525dodd.htm).

[1288] Ibid.

[1289] Ibid.

[1290] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Community Preparedness: Is There News They Can Use?* "Testimony of Paloma O'Riley, Cassandra Project on 'Individual and Community Preparedness for Y2K.'" (http://www.senate.gov/~y2k/hearings/990525/poriley.htm: May 25, 1999); archived at *Wayback Machine* (http://web.archive.org/web/20000823181236/http://www.senate.gov/~y2k/hearings/990525/poriley.htm).

will happen."[1291] Drawing upon roughly the same language that Bennett had used in his own remarks, O'Riley also made reference to purchasing insurance in the face of uncertainty as a prudent and commonly seen practice, and posed the question "do we need proof that a disaster may hit before we're willing to take precautions?"[1292] And this reference to "disaster" was of particular relevance for Y2K, for unlike more traditional disasters that might strike in a handful of locations whilst leaving much of the rest of the country (and world) relatively unscathed, Y2K had the potential to strike everywhere at once, thereby making it so "traditional emergency agencies and services will be unable to respond."[1293] As O'Riley explained, without shifting into outright apocalyptic speculation, the "Red Cross can set up only so many shelters, FEMA was designed to handle only one or two disasters at a time," but should Y2K cause widespread disruptions many communities could find "outside help may be unable to respond for quite some time."[1294]

Considering the potential scale of Y2K related disruptions, a scale that had been attested to by the reports issued by the very committee before which she was testifying, O'Riley argued that "There is no downside to encouraging emergency preparedness," and she called for President Clinton to encourage more people to engage in such activity.[1295] While much of the talk around Y2K was clearly linked to a dependency on computers, O'Riley warned that "Our dependence on emergency services" had led many people to take the reliability of such systems for granted, and had resulted in a dangerous situation wherein "we feel we don't need to take

[1291] Ibid.
[1292] Ibid.
[1293] Ibid.
[1294] Ibid.
[1295] Ibid.

care of ourselves."[1296] The context of O'Riley's comments, and her call for preparedness, was undeniably the disruptions that Y2K could bring, but she was careful to take steps in her testimony to phrase preparedness as being useful regardless of what might transpire. As she noted, "Whether Y2K is a tempest in a teapot or not, I guarantee that it will be followed by a winter storm, flood or some other natural disaster."[1297] Thus, even though O'Riley was not suggesting that Y2K would be a non-event, she was couching community preparedness as being of value beyond this particular crisis, even as her comments situated Y2K within a broader framework of the other sorts of disasters with which societies were well acquainted. With 220 days remaining until Y2K's fateful deadline, O'Riley was not assigning blame, but she was pointing out that should a time come when there would be blame to be assigned, such blame "will fall on those who could and should have provided leadership and encouraged emergency preparedness – but refused to do so."[1298]

While O'Riley's references to natural disasters suggested that community preparedness was simply prudent thinking for an unpredictable world, her testimony was still at base focused on a potential disaster of the technological variety. And as O'Riley outlined the "obstacles" to proper preparedness activities, she made it abundantly clear that Y2K was her focus. In O'Riley's estimation, "Denial and skepticism" represented "the greatest obstacles" facing those trying to get their communities prepared for Y2K, and those obstacles were reinforced by much of the media's coverage of Y2K.[1299] And blame for spreading this "denial and skepticism" could largely be attributed to the sorts of "happy talk" that official sources in the business world and

[1296] Ibid.
[1297] Ibid.
[1298] Ibid.
[1299] Ibid.

government sector were putting out, and though O'Riley acknowledged that the purpose of such optimistic talk was likely to prevent "panic," she argued that such "happy talk" suggested that the primary concern was "not for our families' health, safety, and welfare, but with not rocking the economic boat."[1300] Central to O'Riley's position, which she had previously expressed in testifying before the House, was the belief that too little information as opposed to too much information is what would cause panic—sufficient information could provide people with the knowledge they needed to prepare, while too little information could lead to people being unprepared and thus liable to panic should disaster strike.[1301] O'Riley deftly cut to one of the central contradictions in much of the dominant Y2K conversation, namely "fervent insistence that everything is going to be fine" mixed with "an off-handed" comment "that it's a good idea for people to prepare," O'Riley described this as being reminiscent of "legal disclaimers."[1302] As a representative of the Cassandra Project, it was understandable that O'Riley would be frustrated with the media's tendency to frame "organizers as extremists, alarmists, or worse," and she argued that the mockery the media was directing towards preparedness groups was making their efforts much harder.[1303] While recognizing that "people who are running for the hills…have always been with us, Y2K or no," O'Riley framed such people as "the exception, not the rule" and noted that the focus on those "running" distracted from all of the people who were planning on staying and doing the work.[1304] O'Riley faulted the media for doing "a very poor job of

[1300] Ibid.
[1301] Ibid.
[1302] Ibid.
[1303] Ibid.
[1304] Ibid.

researching and reporting" on Y2K, and with its focus on "a handful of extremists or paramilitary groups" feeding into the confusion more than anything else.[1305]

O'Riley's presence before the Senate Special Committee speaks to one of the central challenges facing those who were seeking to prepare for Y2K. For on the one hand, here O'Riley was, testifying before some of the most powerful people in the world, people who had started the hearing by basically highlighting the need for people to be doing exactly the sort of preparatory work that O'Riley and the Cassandra Project were doing. Rather than just provide the Special Committee with a report of the sorts of activities in which the Cassandra Project was engaged, O'Riley had spoken about the ways that—outside of that particular Committee—much of the government reaction towards Y2K was filled with "happy talk" and much of the media coverage was fixated on poking fun at those who were preparing for the end of the world. While Bennett had made it a point to emphasize that "Y2K will not be the end of the world as we know it—or TEOTWAWKI, as the web sites call it,"[1306] O'Riley had herself taken pains to differentiate herself, and her group, from the "handful of extremists or paramilitary groups."[1307] And perhaps the most significant way in which O'Riley set herself apart from those "running for the hills" was in her repeated emphasis on community, and in her willingness to frame Y2K preparedness as being useful beyond Y2K (thereby recognizing that Y2K might not wind up being cataclysmic). In terms of preparedness, O'Riley stuck to a position of "There is no down side [sic] to being prepared for emergencies" and highlighted that even if Y2K did not knock out the power, chances were that sooner or later most people would encounter some sort of power

[1305] Ibid.
[1306] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Community Preparedness: Is There News They Can Use?* "Senator Robert F. Bennett, Chairman: Opening Statement."
[1307] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Community Preparedness: Is There News They Can Use?* "Testimony of Paloma O'Riley, Cassandra Project on 'Individual and Community Preparedness for Y2K.'"

outage.[1308] Though O'Riley's concern over Y2K was real, O'Riley saw Y2K as providing communities with a "reason to rejoice," namely that in preparing for Y2K communities were learning "that together they can pool resources and help themselves and each other meet any emergency."[1309] As O'Riley put it one of the "gifts" that Y2K planning would bring was a "new found sense of self-reliance and self-confidence, and a rediscovered sense of community."[1310]

There were many groups and individuals that saw Y2K through a religious lens, and saw themselves as called upon to act in keeping with the religious beliefs they had held before the arrival of Y2K—but the groups and individuals in the orbit of the Cassandra Project demonstrate an alternative approach to Y2K preparedness. An attitude that was not so much couched in a vision of the Church community, as in a vision of community more broadly defined. Here the stance was not one of needing to put faith in God, but rather for communities to have faith in themselves. And amidst the very real worries regarding the sorts of disruptions that Y2K might bring, there was an underlying hopefulness that Y2K could provide an opportunity to renew and strengthen local community binds. The potential failures on the part of the federal government and large corporations were not seen here as a sign of divine punishment, but rather as a reminder about the importance of local community organizing. The ethos that permeated amongst these groups and individuals was captured in a formulation that O'Riley frequently repeated, namely: "Individual preparedness is for those who can; community preparedness is for

[1308] Ibid.
[1309] Ibid.
[1310] Ibid.

those who can't."[1311] And Y2K certainly had the potential to give rise to the sorts of conditions wherein there would be many who were not able to prepare individually.

A non-profit organization "dedicated to disseminating information on the role of the individual and the community in Y2K preparedness," the Cassandra Project engaged with Y2K in a variety of ways.[1312] The project's objectives involved raising "public awareness," promoting "community preparation activities," keeping track of the efforts by various government entities "as it relates to the public welfare," encouraging "contingency planning," and building "a clearinghouse for neighborhood and community preparedness activities."[1313] Many of those who submitted testimony alongside O'Riley before the Senate Special Committee attested to the involvement of the Cassandra Project in the efforts of their own groups: Cindy Brown, who wrote the Douglas County Emergency Preparedness Plan, praised "O'Riley and her Cassandra Project for inspiring us and providing a monumental amount of research for us to share,"[1314] Steve Davis counted the Cassandra Project as one of the organizations helping make up the "Coalition 2000" (a group of organizations that shared a similar goal of community preparation in the face of Y2K),[1315] Norman Dean, the executive director of the Center for Y2K and Society did not mention the Cassandra Project in his submitted testimony but O'Riley was named and

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[1311] Paloma O'Riley. "All Together Now," in *Y2K Citizen's Action Guide*, ed. Eric Utne (Minneapolis: Utne Reader Books, 1998), 48-49. 48

[1312] Cassandra Project. "Welcome." *Cassandraproject.org.* (http://www.cassandraproject.org/: ND); archived at *Wayback Machine* (http://web.archive.org/web/20000303033937/http://www.cassandraproject.org/).

[1313] Cassandra Project. "Our Objectives." *Cassandraproject.org.* (http://www.cassandraproject.org/: ND); archived at *Wayback Machine* (http://web.archive.org/web/20000303033937/http://www.cassandraproject.org/).

[1314] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Community Preparedness: Is There News They Can Use?* "Testimony Cindy Brown." (http://www.senate.gov/~y2k/hearings/990525/cbrown.htm: May 25, 1999); archived at *Wayback Machine* (http://web.archive.org/web/20000823175717/http://www.senate.gov/~y2k/hearings/990525/cbrown.htm).

[1315] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Community Preparedness: Is There News They Can Use?* "Written Testimony of Steve Davis, Spokesperson for Coalition 2000, for submission to the Special Senate Committee on the Year 2000 Technology Problem." (http://www.senate.gov/~y2k/hearings/990525/coalition2000.htm: May 25, 1999); archived at *Wayback Machine* (http://web.archive.org/web/20000823181745/http://www.senate.gov/~y2k/hearings/990525/coalition2000.htm).

thanked in the community report cards his organization distributed, and though she was not present at that committee meeting Shaunti Feldhahn had pointed to O'Riley and the Cassandra Project as she sought to make the case for the Christian focused preparedness efforts of The Joseph Project.[1316] And while O'Riley had clearly demonstrated some frustration with the way much of the media was treating Y2K, and those preparing for it, her group was framed fairly sympathetically in the *New York Times* cover story on Y2K from the end of 1998 where the Cassandra Project was named as the connection point for "the community groups" working "to foster more cooperation nationally," with the Cassandra Project being juxtaposed against the efforts of "alarmists."[1317] And in a sidebar graphic accompanying that cover story focusing on "What Will Work?" to the question of "Where can I find out about how to cooperate with neighbors to reduce risks?" the *Times* provided an answer of "The Cassandra Project (www.millennia-bcs.com) has information on community groups" which may not have fully represented an outright endorsement of the group, but was hardly a reprimand.[1318] And those turning to the Cassandra Project for more information, whether directed there by *The New York Times* or some other source would find plenty of explanatory information awaiting them there.

In its "Year 2000 Frequently Asked Questions" posted on its website, the Cassandra Project offered something that functioned simultaneously as an informative set of answers to the questions people might have, and as a sort of philosophical statement regarding the Cassandra

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[1316] Shaunti Feldhahn. *Y2K, The Millennium Bug: A Balanced Christian Response.* 111.
[1317] Barnaby J. Feder and Andrew Pollack. "Computes and Year 2000: A Race for Security (and Against Time)." *The New York Times*. December 27, 1998. A1, A22-A23. A22.
[1318] Tom Zeller. "Answers: What Will Work?" *The New York Times.* December 27, 1998. A22. Note: this small piece was an inset in the article Barnaby J. Feder and Andrew Pollack. "Computes and Year 2000: A Race for Security (and Against Time)." *The New York Times*. December 27, 1998. A1, A22-A23.

Project's core values.[1319] There was a clear disclaimer, making it evident that the point of the publication was "to provide general information," but rather than embrace concrete certainty about what would happen (or draw out three possible scenarios) the responses were centered around the idea that the only real silver-bullet solution to the Y2K problem was a strong community.[1320] In explaining the problem, the Cassandra FAQ discussed the technological roots of the crisis, without delving into technological detail—beyond emphasizing that those in the IT world had known about the problem for decades, and that problems were already popping up.[1321] Commenting on the scale of the remediation challenge as being the true problem, the Cassandra FAQ evocatively described the problem by noting that it would be easy "to change out a rivet on the Golden Gate Bridge" all one would need was the tools and a little bit of knowhow, but "if you were told to change out ALL the rivets on the Bridge, but you only have 48 hours to do it, that's a problem!" with Y2K clearly being meant as a case of the 48 hour scenario—in other words, it wasn't that the work itself (changing rivets) was too difficult for those with the tools and the knowhow, but that the amount that needed to be done and the limited time in which to do it represented a major challenge.[1322] And to those who might react with a sort of shrug, seeing as they did not personally own a computer, the Cassandra FAQ emphasized that the problem was not so much one of individual reliance on computers but of societal reliance on computers—indeed, "Even though you don't own a computer, most of the things you do, need, use and call up for assistance does use computers."[1323] The Cassandra FAQ acknowledged that it was

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[1319] Cassandra Project. "Year 2000 Frequently Asked Questions (FAQ)." *CassandraProject.org.* (http://cassandraproject.org/sections/archive/site/bug/y2kfaq.html: ND); archived at *Wayback Machine* (http://web.archive.org/web/20000930125104/http://cassandraproject.org/sections/archive/site/bug/y2kfaq.html).
[1320] Ibid.
[1321] Ibid.
[1322] Ibid.
[1323] Ibid.

impossible to know what all might happen, which specific computers and microprocessors might stop working, and what could be knocked out by a potential domino effect—yet "anything electronic may potentially be affected by the date problem."[1324] Anyone who needed a much more detailed explanation of the risks represented by Y2K could read the lengthy feature, also available for free on the Cassandra Project website, "Why Y2K is a Threat to Public Health and Safety" that explored the dangers to "Critical Infrastructure" and other "Essential Systems and Services."[1325] Granted, the primary goal of the Cassandra Project was not to provide the most detailed information possible on Y2K—the FAQ features repeated references to information sources such as the IEEE and Gartner Group—the purpose of the Project was to provide guidance for community preparedness.

So, what then did the FAQ recommend that people actually do? While the FAQ did not seek to underplay the potential risks, and sought to highlight that real dangers did exist, the responses had a decidedly non-apocalyptic bent—"no matter what happens, it won't last forever."[1326] Though Y2K, with its basis in widespread reliance on complex computer systems, represented a novel danger in many ways, the FAQ encouraged people to "Prepare for Y2k [sic] as you would a natural disaster" and "Approach Y2K as you would a natural hazard."[1327] Given the scale of the problem, the FAQ argued that "Drastic lifestyle changes are not the appropriate response" and placed the emphasis on small personal steps in concert with a focus on community

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[1324] Ibid.
[1325] Cassandra Project. "Why Y2K is a Threat to Public Health and Safety." *CassandraProject.org.* (http://cassandraproject.org/sections/archive/feature/health_n_saftey.html: ND); archived at *WaybackMachine* (http://web.archive.org/web/20000930125016/http://cassandraproject.org/sections/archive/feature/health_n_saftey.html).
[1326] Cassandra Project. "Year 2000 Frequently Asked Questions (FAQ)." *CassandraProject.org.*
[1327] Ibid.

action.[1328] The FAQ did not advise people to invest in generators (unless they absolutely needed them for medical devices), playfully mocked those who were thinking about stocking up on gold ("Ever wonder how you make change for a Krugerand?"), and did not recommend that people purchase guns ("Shooting someone isn't like in the movies")—such things all leaned too much in the direction of a personal focus, and the point that the Cassandra Project kept returning to was that weathering any dangerous storm (be it Y2K or a Hurricane) required community.[1329] Despite taking the legendary prophet of doom Cassandra for their namesake, the Cassandra Project clearly stated "Beware of anyone who tells you this is the 'end of the world', and check to see if they're selling something" a point that the group drove home later in the FAQ with the statement "Just for the record, The Cassandra Project doesn't sell anything. Everything we do, have and provide is free of charge."[1330]

Amongst the things the Cassandra Project offered free of charge was a lengthy "Individual Preparedness for Y2K" guide that was offered on the organization's website—it was a thorough guide that touched upon everything from food to water to finances to communication.[1331] A noteworthy aspect of the guide is to be found simply by considering its title. At a moment when there were plenty of books available that clearly put the word "survival" in their titles (Hyatt's *The Y2K Personal Survival Guide* being one such example), the Cassandra

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[1328] Ibid.
[1329] Ibid.
[1330] Ibid.
[1331] "Updated February 2, 1999." Charles Babbage Institute. Center for Y2K and Society Records. Box 6. Folder "Paloma O'Riley." A complete printout of the guide can be found amongst the papers of the Center for Y2K and Society. For the purposes of citing from the actual report, this copy will be referred to (This document was not available through archived versions of the Cassandra Project website). As is noted later in this paragraph, versions of this guide proliferated elsewhere as well. Please note: the folders in CBI 155 are not numbered, instead each folder has a written title (which seem to have been the original file names from the Center). In some cases, as will be noted in the notes ahead, multiple folders featured the same names, in such cases other identifying details of the folder will be supplied (along with the box number).

Project was instead offering a "Preparedness" document. O'Riley, who is listed as the guide's author, begins with introductory remarks that frame the guide as being, "Somewhere between predictions of technological doomsday, and those who say that 'Y2K' is the invention of rabid money hungry consultants—lies reality."[1332] Acknowledging "the absence of hard facts and data," the introduction argued that it was prudent to "err on the side of caution and skepticism" and be ready.[1333] In another clear statement against apocalyptic alarm, O'Riley noted "Preparing for worst [sic] doesn't mean you believe it will happen, it means only that you accept that the possibility of occurrence exists" and taking some simple preparatory steps was framed as being akin to purchasing fire insurance or car insurance.[1334] The "preparedness" information offered by O'Riley was fairly straightforward, and consisted of step by step instructions (drawn heavily from FEMA) regarding what types of supplies to have on hand, in what quantities, and how to properly store them in the case of major power disruptions. While much of the information provided was certainly of the general disaster preparedness variety, the emphasis on long-term power disruptions and other particularities of Y2K fed into an emphasis on needing to prepare for unreliable power (which also included recommendations that people have hard copies of all essential documents).[1335] Despite the presence of the word "individual" in the guide's title, there was a consistent emphasis on working with others—as the guide put it "The best security is a prepared neighbor."[1336] And amongst all of the other suggested preparatory steps was also "Talk to your neighbors" the point was not necessarily to "convince them Y2K is a problem" but to

[1332] Ibid.
[1333] Ibid.
[1334] Ibid.
[1335] Ibid.
[1336] Ibid.

start the conversation—and to ensure that people actually knew their neighbors.[1337] The guide closed with an acknowledgement that "Many people who prepare for Y2K are labeled at [sic] 'survivalists', 'alarmists' or worse" but the guide highlighted that there was a difference between "prudent precautions and extreme lifestyle changes" and what the guide was advising was the former not the latter.[1338]

The Cassandra Project was a call for community responses, and the organization was itself part of a broader community of individuals and groups banding together around and about Y2K—though this represented a rather different sort of assembly than that seen around the more religiously minded responses to Y2K. What seems to have united many of these groups is a sentiment that was in line with O'Riley's juxtaposition of those who can and cannot prepare, twinned with her sense that "we can and will get through this or any other difficulties, if we all work together."[1339] O'Riley stepped away from her role as The Cassandra Project's research director in the final quarter of 1999, in order to focus more directly on political advocacy around preparation for potential disasters.[1340] However her frustration with politician's lackadaisical attitudes, and her sense that "People are developing a false sense of security," was in keeping with a view that organizations like the Cassandra Project were necessary to fill a preparedness void.[1341] The dangers presented by Y2K seemed ideal to reveal not only how reliant communities had become on computers, but also the extent to which communities had stopped functioning as communities, and for many of the groups in the Cassandra Project's orbit Y2K appeared as an opportunity to consider what the computer had done to community, and whether Y2K could be a

[1337] Ibid.
[1338] Ibid.
[1339] O'Riley. "All Together Now." 48.
[1340] Barnaby Feder. "Founder of Year 2000 Service Quits to Try Different Approach." *The New York Times.* September 27, 1999. C4.
[1341] Ibid.

chance to push back. O'Riley was a major contributor to the left-wing magazine *Utne Reader*'s *Y2K Citizen's Action Guide*—which reprinted a large portion of her "Individual Preparedness for Y2K," but which also featured her expounding on Y2K's connection to community more generally. Under the title of "Let's Not Run For the Hills!", on the Cassandra Project website, O'Riley had set out a community based vision of response—and this piece appeared in the *Utne Guide* under the title of "All Together Now." There O'Riley stated "Life isn't just survival, it's about living, budling and growing; and passing it on to the next generation" and to this she added "The only way to get through this is to pull together and work through it as a community."[1342] And in the pages of the *Utne Guide* O'Riley's words were clearly a part of a community of similarly concerned individuals.

In introducing the *Guide*, Eric Utne (the founder and editor-in-chief of the *Utne Reader*) commented briefly on the seriousness of the problems and the importance of taking preparatory steps, and yet for all of his recognition of dangers he maintained a doggedly sunny tone.[1343] For, as Utne saw it, while preparing for Y2K "something surprising and unexpected and quite wonderful is going to happen. We're going to get to know our neighbors. Possibly for the first time in our lives, we will begin to know what it means to live in real community."[1344] With the looming threat of the breakdown of the computer systems that had done so much to feed into alienation, "Y2K is the excuse we've been waiting for to stop making so many compromises in how we know we should, and want to, live our lives."[1345] Y2K could be the catalyst for "living more sustainable, environmentally friendly lives" characterized by "webs of affiliation, care, and

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[1342] Ibid.
[1343] Eric Utne. "I Am Because We Are," in *Y2K Citizen's Action Guide*, ed. Eric Utne (Minneapolis: Utne Reader Books, 1998), 13-14.
[1344] Ibid, 14.
[1345] Ibid.

mutual support."[1346] And that vision of what Y2K could bring permeated the other contributions to the *Utne Guide.* Margaret Wheatley and Myron Kellner-Rogers wrote of Y2K as exposing the fragility and uncontrollable nature of "complex systems" while noting that in forcing people to confront their reliance on computer technology Y2K "exposes our dissatisfactions with our hectic and lonely lives" even as Y2K presented a challenge that "can't be solved alone."[1347] Similarly, Larry Shook argued that "it's a modern myth that technology has set humanity free, frank review of Y2K implies the opposite to many," and in which he praised O'Riley as "America's high priestess of Y2K community preparedness" in order to emphasize the necessity of using the remaining time to prepare.[1348] Beyond the local community, Tom Atlee, Gordon Davidson, and Margo King, provided guidance on how those interested in and concerned about Y2K could pose the right questions to public officials—showing how Y2K could help instill an ethos of engaged citizenship.[1349] And Kathy Garcia, who would later be profiled in the aforementioned *New York Times* article, expounded upon what she had learned, and others could make use of, from her experiences doing Y2K organizing in Boulder, Colorado.[1350]

The individuals who were drawn to Y2K by this shared vision of community were nowhere near as prolific publishers as those who were drawn to Y2K from a religious perspective (or technical professionals publishing straightforward information guides). Nevertheless, many of those who provided brief contributions to the *Utne Guide* more fully

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[1346] Ibid.
[1347] Margaret Wheatley and Myron Kellner-Rogers. "Turning to One Another: The Possibilities of Y2K," in *Y2K Citizen's Action Guide*, ed. Eric Utne (Minneapolis: Utne Reader Books, 1998), 16-21.
[1348] Larry Shook. "The Y2K Neighborhood," in *Y2K Citizen's Action Guide*, ed. Eric Utne (Minneapolis: Utne Reader Books, 1998), 22-34.
[1349] Tom Atlee, Gordon Davidson, and Margo King. "Questions for Public Officials," in *Y2K Citizen's Action Guide*, ed. Eric Utne (Minneapolis: Utne Reader Books, 1998), 42-46.
[1350] Kathy Garcia. "Organizing Your Neighborhood for Y2K: Adapting the Boulder Model," in *Y2K Citizen's Action Guide*, ed. Eric Utne (Minneapolis: Utne Reader Books, 1998), 55-68.

expounded upon what they made of Y2K in the book *Awakening: The Upside of Y2K*—which was edited by Judy Laddon, Tom Atlee, and Larry Shook. Less an explanation of Y2K than a philosophical and spiritual engagement with the significance of Y2K, *Awakening* provided details for those in need of them, but primarily couched these in a broader exploration of the significance of what Y2K really meant. This was ruminated upon at length by Wheatley and Kellner-Rogers (here joined by John Petersen) in their chapter "The Year 2000: Social Chaos or Social Transformation" wherein the writers looked at Y2K as revealing some unpleasant fundamental truths about what computer technology had done to society, such that "We have created non only a computer-dependent society, but an interdependent planet."[1351] And the significance of this being that "We only see the interdependencies when the relationships are disrupted."[1352] As they saw it, Y2k represented "a technological problem that cannot be solved by technology" – the response would require people coming together to prepare, and to work for the sake of the common good.[1353] For Tom Atlee, Y2K was similarly revelatory in that it showed the direction that society was being steered in by computer technology and the powerful interests that controlled that technology, but the potential failure demonstrated that "This is the time for figuring out how to change the rudder of civilization" in what he saw as "a once-in-a-millennium opportunity."[1354] Y2K, in Atlee's estimation could provide a chance for people to seize control of the rudder of civilization and change course to guide society towards "a sustainable, just world made up of resilient, vibrant communities."[1355] And as Atlee made clear, opportunities like this could not be taken for granted. While *Awakening* strikes a largely secular tone, if perhaps

[1351] Judy Laddon; Tom Atlee; and Larry Shook (eds). *Awakening: The Upside of Y2K.* (Spokane: The Printed Word, 1998). 21.
[1352] Ibid.
[1353] Ibid, 23.
[1354] Ibid, 40-41.
[1355] Ibid, 41.

inflected by some hippie spirituality, the book also includes a sermon from the Unitarian Universalist minister Rev. Dacia Reid that called for the building of (metaphorical) lifeboats while emphasizing that "The thing about lifeboats is that they are not individual" but that they have "to be launched with some help from people still on the ship."[1356] Thus, in preparing for Y2K, communities were getting the lifeboats ready for launch and helping push them out to sea—not to save themselves, but to preserve their communities.

Though a hopeful vision of Y2K as an opportunity to build community and question the dominance of computers was shared amongst many of these individuals and groups—they did not find the most receptive audience as they tried to bring their message to the larger community. That frustration was certainly evident in O'Riley's testimony before the Senate Special Committee, but hers was not the only testimony that captured this sense of disappointment. In his submitted testimony, David Sunfellow of the Sedona Y2K Task Force provided the Committee with the results of a survey that had been conducted by Tom Atlee and Rosa Zubizaretta in May of 1999 to get a sense of how Y2K grassroots activists felt things were going, and the hundred responses received (which represented "29 states, the District of Columbia, Canada, and Australia") provided a snapshot of how community activists felt their efforts were going.[1357] While, according to the survey's summary, "a significant number of organizers feel their efforts are bearing fruit" this was couched in a sense that many organizers were finding that it was "becoming increasingly difficult" to organize their communities.[1358] Many of the respondents

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[1356] Ibid, 97.
[1357] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Community Preparedness: Is There News They Can Use?* "Written Testimony for the Special Committee on the Year 2000 Technology Problem from David Sunfellow." (http://www.senate.gov/~y2k/hearings/990525/dsunfellow.htm: May 25, 1999); archived at *Wayback Machine* (http://web.archive.org/web/20000823180208/http://www.senate.gov/~y2k/hearings/990525/dsunfellow.htm).
[1358] Ibid.

expressed particular frustration with the government and the media, and conveying the sense that as the government and media had staked out an optimistic stance (while belittling preparedness activities) it had led to a general drop in interest in Y2K.[1359] And this in turn led to a sense of worry that should problems start appearing in the waning days of 1999, and should more people start to grow concerned, that too little time would remain for serious community preparation work.[1360] In one of the named, and quoted, responses to the survey, Judy Laddon stated that "The lack of public interest in Y2K is distressing our task force" and warned that "Without national leadership or an actual crisis, people will keep sleeping."[1361] Bennett and Dodd may have started the hearing by praising preparedness, but Sunfellow's submitted testimony (and the survey results he presented) provided a retort of just how difficult it was to be engaged in that work.

In February of 1999, George Johnson at *The New York Times* provided a look at the "loose coalition of New Agers, veterans of the 1960's counterculture and grass-roots populists" who were embracing "Y2K as a chance to cut free from their stifling addiction to The System and remake society."[1362] Alongside an image of Larry Shook and Judy Laddon, the article quoted from Utne's introduction the *Y2K Citizen's Action Guide*, and framed these "Y2K Utopians" as a strange contrast to the Y2K doom-mongers, as they pined "for the earthy optimism of the 60's" and saw Y2K as "an antidote to the sanitized 90's."[1363] Mockingly describing O'Riley and her ilk as "people who seem to secretly long for an extended Y2K camping experience," the article represented exactly the sort of media coverage that O'Riley would criticize in her testimony a couple months later—as it acknowledged the existence of Y2K related challenges while treating

[1359] Ibid.
[1360] Ibid.
[1361] Ibid.
[1362] George Johnson. "For Y2K Utopians, a Chance to Remake the System." *The New York Times.* February 14, 1999. WK4.
[1363] Ibid.

those advising precautions be taken as relics from the 60s.[1364] And in October of 1999, several months after the hearing and Sunfellow's survey results, *The New York Times* was reporting on the flagging interest in Y2K.[1365] O'Riley and Zubizaretta were both quoted, with Zubizarretta commenting on the challenges of organizing, while O'Riley in addressing those who attended a Y2K event provides an almost tragic gesture towards community with the statement "I hope we leave here a little less depressed, a little energized…Mostly I want us to feel a little less isolated."[1366]

Faced with the uncertainty of Y2K, O'Riley and many others sought to respond not by running to the hinterlands, but by walking to their neighbors. The Cassandra Project had not laid out clear scenarios for what was going to happen, and though its activities make clear that they were not anticipating a non-event, the focus on general preparedness as a wise strategy placed Y2K in the broader framework of a range of risks. O'Riley had written "No one knows what will happen, nor how serious it will be. However, we can and will get through this or any other difficulties, if we all work together."[1367] A statement not of faith in the saving power of an all-powerful deity, but a statement of faith in all the power of people.

Making the Grades

In his submitted testimony for the Senate Special Committee's hearing on "Community Y2K Preparedness," Norman L. Dean, the executive director, of the Center for Y2K and Society,

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[1364] Ibid.
[1365] Barnaby Feder. "Year 2000 Activists Share Tales of Public Apathy." *The New York Times.* October 24, 1999. A22.
[1366] Ibid.
[1367] O'Riley. "All Together Now." 48.

quoted Senator Bennett's words back to him.[1368] Specifically Bennett's comments from a December 1998 gathering of regulatory officials from various states at which Bennett had defended the public's "right to know about this one," telling the regulators that "the public deserves to be told the truth, told the truth early, and told the truth often."[1369] Yet, even as he thanked Bennett for the sentiment underlying those comments, Dean's submitted testimony made it clear that with 220 days remaining until the looming deadline, the efforts to inform the public left much to be desired.

As Dean explained it, in the remaining months of 1999 it was essential for the remediation work to continue, but alongside this work it was essential for better information to be provided to the public so that they could enter the waning days of 1999 with a realistic sense of the status of repairs—and the contingency plans for the things that had not been repaired in time. Speaking on behalf of the Center for Y2K and Society, Dean highlighted three steps as being necessary for the Senate Special Committee to pay attention to in the remaining months. First, "Local officials should demand concrete and specific data on the Y2K readiness of key community service providers," as any effort to properly prepare could only really go forward if it was based on reliable and accurate information.[1370] Second, considering how much of the information about Y2K was based on self-reported assessments, "Local officials should press for independent auditing of the Y2K readiness of the most critical areas impacting public health and safety," with Dean evoking Ronald Reagan's advice of "trust but verify."[1371] And thirdly, in

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[1368] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Community Preparedness: Is There News They Can Use?* "Statement for the Record. Norman L. Dean, Executive Director, Center for Y2K and Society." (http://www.senate.gov/~y2k/hearings/990525/ndean.htm: May 25, 1999); archived at *Wayback Machine* (*http://web.archive.org/web/20000823175744/http://www.senate.gov/~y2k/hearings/990525/ndean.htm*).
[1369] Ibid.
[1370] Ibid.
[1371] Ibid.

something of a reprimand to the Committee and the government efforts more broadly, Dean stated that "The federal government should provide stronger leadership to local communities."[1372] Though Dean gave some credit to the Clinton administration's initiative to launch "Community Conversations" around Y2K, he noted "we are disappointed in the program's scope and tone," worrying that these events seemed to be "PR events aimed at reassuring the public" rather than gatherings "promoting community action initiatives."[1373] And similarly to Paloma O'Riley, Dean warned that the "happy talk" coming from the federal government could result in the very sorts of panic it was intended to prevent should people be "lulled into a sense of complacency about the very real risk of local Y2K problems."[1374] Dean argued that "Local communities should do much more to prepare for Y2K," but even as he placed emphasis on the "local" he did not absolve the federal government of responsibility—particularly drawing attention to the need for more information.[1375] Especially more information at the local and state level.

What's more, the Center for Y2K and Society had a plan for getting and sharing that information. A plan that gave some places an opportunity to tout just how much they had done, others an opportunity react with fury and frustration to the Center's efforts, and which overall demonstrated why informing people about Y2K was so difficult.

Beneath a banner reading "It's not just about computers. It's about people." The Center for Y2K and Society began the first installment of its "Y2Kountdown" newsletter with an

[1372] Ibid.
[1373] Ibid.
[1374] Ibid.
[1375] Ibid.

informative "Who We Are."[1376] Established near the end of 1998 with the support of a group of foundations, "The Center exists to educate, empower and assist nonprofit organizations in responding to the serious societal impacts that could occur as a result of the Y2K problem."[1377] With a mission to "instill a national sense of urgency" around the Y2K problem, the Center placed a heavy emphasis on the role of communities hoping to "encourage citizens to work together" and "encourage a reasoned collective community response…while discouraging panic."[1378] While the Center was concerned with the broadly defined potential impacts flowing from Y2K, it was particularly focused on a few spots: "Maintaining an effective healthcare system…Protecting the interests of the poor, the elderly, the disabled and other vulnerable populations…And ensuring a safe environment, including preventing dangerous chemical and nuclear accidents."[1379] And in working towards achieving those goals, the "Y2Kountdown" was just one example of the way that generating public facing information about the state of the crisis was a part of fulfilling the Center's goals. Center programs and initiatives included a grant program aimed at supporting "community action to prepare for Y2K problems" that (through June and July of 1999) provided awards of $5,000 to $20,000 to "nonprofit organizations working to encourage Y2K preparedness at the local, state and regional level" with priority being given to groups whose work aligned with the Center's own areas of concern.[1380] And by December of 1999, The Center had issued "$365,000 in small grants to 44 local organizations for

[1376] "Y2Kountdown. Issue 1." June 1, 1999. CBI 155, box 8, folder "Y2Kountdown: Originals." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.
[1377] Ibid.
[1378] Ibid.
[1379] Ibid.
[1380] "Y2Kountdown. Issue 2." June 3, 1999. CBI 155, box 8, folder "Y2Kountdown: Originals." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.

their work in the areas" that were of particular concern to The Center.[1381] In addition to the grants program, The Center maintained a website targeted at providing information "directed at nonprofits and foundations"; engaged in extensive media outreach to major press outlets; maintained an e-mail alert list through which they offered updates; held conference calls on key Y2K issues targeted at nonprofits and foundations; used FOIA requests to "force public disclosure of key information" regarding the Y2K readiness of parts of the government"; worked with the organizer Rosa Zubizarreta to initiate a specific "Latino Outreach Project"; and issued reports of its findings.[1382] Through it all, The Center "faced formidable obstacles in working toward its goals" ranging from the prevailing message that Y2K would just be a "bump in the road" which made many to treat it dismissively, to the "shear breadth of the issue" that made it so that The Center was trying to make sense of an overwhelming amount of information, to the fact that many other nonprofit organizations and foundations expressed a lack of interest in getting involved in Y2K efforts.[1383] But amidst all of these programs and initiatives, one that was of particular importance was The Center's Y2K Community Report Card Project.

"Is Your Community Prepared?" This simple question adorned the cover, floating just above the words "A Y2K Report Card" and signaling that this report card could be a tool to answering that troubling query.[1384] Alongside a swift overview regarding "What is the Y2K Computer Problem?", the report began by acknowledging that even as large corporations and the

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[1381] "Center for Y2K and Society. Assessment of Work to Date As of December 7, 1999." December 7, 1999. CBI 155, box 8, folder "Steering Comm. Meeting 12/14/99 BINDER." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.
[1382] Ibid.
[1383] Ibid.
[1384] "Is Your Community Prepared? A Y2K Report Card." ND. CBI 155, Box 2, folder "Report Card." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota. Please note: there are many folders in this collection titled "Report Card." In this particular case the folder is a manila folder with the word "Report Card" written on the tab in blue script, with a blue underline.

federal government had "spent billions of dollars fixing the Y2K computer problem" and were "likely to avoid most serious problems" as a result, the condition of state and local governments was less clear.[1385] And while it was a good thing that so much had been done at the federal level, seeing as many smaller communities had done rather little to prepare, it remained unclear exactly what would befall them.[1386] And the report card framed the potential risks in a recognition that possible problems had the potential to disrupt daily life—and to potentially have a particular impact on "the poor and elderly."[1387] Thus, the introduction within the report card described the "purpose" of the tool as "to enable you to determine whether your city, town, or county is prepared to deal with the Y2K problem."[1388] Especially for those "that are just beginning to tackle Y2K" the report card was framed as a tool that could provide "an outline of key issues that need to be tackled."[1389] Meanwhile, in keeping with The Center's focus on working with the nonprofit community, the report card was touted as being something that could assist those organizations in doing Y2K work, or helping prepare them to participate in the "Y2K Community Conversations" that the Clinton Administration had launched.[1390] And though the target demographic for the report card was not particularly those in the media, the introduction suggested that the questions posed in the report card could help reporters "in investigating community readiness."[1391]

[1385] Ibid.
[1386] Ibid.
[1387] Ibid.
[1388] Ibid.
[1389] Ibid.
[1390] Ibid.
[1391] Ibid.

The Report Card consisted of six "areas of concerns," and within each of those top-level areas there were five questions to be specifically asked.[1392] The five questions in each section were of a "yes" or "no" variety, and the grading rubric was fairly simple and straightforward: for each of the questions, those filling out the report card were to answer in the affirmative or negative, for every "yes" answer one point was to be awarded, and for every "no" answer zero points were to be awarded.[1393] And though the report did not encourage the awarding of half-points, or openly address that there were some cases where an answer between "yes" and "no" might be appropriate, the instructions did not feature any comments that expressly prohibited the awarding of partial points. Though there was a slight tendency in the instructions to lean towards harsher grading, considering that an answer of "no" (thus giving zero points) was to be given in cases where the person filling out the report card did not know "or can't find out" or in which the officials they contacted were "unable or unwilling to provide an answer."[1394] With thirty questions to be answered, there were thirty possible points at stake: twenty-four to thirty points represented a grade of "A" meaning "Your community is in excellent shape"; twenty to twenty-three was a "B" meaning "Your community is in relatively good shape but needs some work"; fifteen to nineteen points earned a grade of "C" suggesting "Your community has begun to prepare for Y2K but needs a lot of additional work"; eight to fourteen points earned a "D" meaning "Your Community is poorly prepared and needs to give Y2K preparations the highest priority"; while seven points or fewer earned an "F" meaning "Your community is not at all prepared for Y2K and needs to begin Y2K work on an emergency basis."[1395] While the report

[1392] Ibid.
[1393] Ibid.
[1394] Ibid.
[1395] Ibid.

card was a tool for a community to perform an assessment of its own local readiness, The Center also requested that those filling out the report cards share their results with The Center which was "tracking the readiness of communities across the United States."[1396]

The Center's report card gave its grades based on six particular areas, these were: "Planning," "Individual and Neighborhood Preparedness," "Healthcare," "Public Safety and Environment," "Especially Vulnerable Persons," and "Critical Community Services."[1397] And to gauge how many out of five possible points should be awarded to each of these "areas of concern," five questions were offered—with the questions being offered in both an abridged and a more detailed form. Questions ranged from "Has your community identified and focused on those systems, institutions and business that are most critical and most at risk from Y2K failures?"[1398] to "Have written materials on Y2K preparation been distributed to each household?"[1399] to "Will there be a 30-day supply of critical medications in the community as of January 1, 2000?"[1400] to "Are representatives from minority communities and underserved or distressed neighborhoods involved in the community emergency planning process?"[1401] to "Has an independent audit been conducted of the Y2K readiness of the local electric utility and, if relevant, the local gas utility?"[1402] and alongside these, there were twenty-five additional questions. Though framed to solicit "yes/no" answers, many of the questions were sufficiently complex as to make it clear that providing such an answer would be something of an oversimplification, similarly given the wide range of subjects covered in the report card it was

[1396] Ibid.
[1397] Ibid.
[1398] Ibid. This question is one of the "Planning" questions.
[1399] Ibid. This question is from "Individual and Neighborhood Preparedness."
[1400] Ibid. This question is from "Healthcare Systems."
[1401] Ibid. This question is from "Protecting Especially Vulnerable People."
[1402] Ibid. This question is from "Critical Community Services."

clear that those filling out the report card would need to do a fair bit of research in order to be able to answer many of those questions—and considering the guidance to assign zero points when information was unavailable, it was clear that it would be much easier to earn a "C" than an "A."

By the time the report card was published and distributed, towards the end of August 1999, the impending deadline was looming closer and closer, and the report card seemed cognizant of the limited time that remained. A Y2K remediation project in ideal conditions involved the steps of assessment, making necessary repairs, testing those repairs to make sure they worked, and developing contingency plans just in case things should go wrong (or in the case of domino effects). Alas, by the time the report cards were being distributed there was simply not enough time left to "assess, repair and test" all of the problems for a community just getting started, the report card noted "Ultimately, the best preparation for an unknown future is a strong community where people know each other and know how to work together well in an open and democratic fashion."[1403] And part and parcel to that, if communities could not confidently state that the repairs had been done and tested, at this point what they needed to do was make contingency plans. Granted, in making contingency plans, the question that next arose was "how long an emergency should you plan for?" and though the report card acknowledged that there was not a single right answer to this "how long" they still argued that "Any planning period of less than 1 to 2 weeks should be viewed skeptically and should be fully justified by local officials."[1404] But as for the individual's role in preparing for Y2K, the report card framed this in terms of two things: individuals needed to prepare their own homes for possible

[1403] Ibid.
[1404] Ibid.

disruptions (the report card suggested consulting The Red Cross for guidance on this), while also encouraging neighbors to take similar steps; and secondly the report card urged individuals to maintain pressure on "public officials and key services suppliers" to make sure they were getting the work done and planning.[1405] Average citizens might not be in a position to make all of the repairs themselves but they could "hold public officials accountable for planning for Y2K" and "This report card provides one tool for you to accomplish that goal."[1406]

In an internal memorandum from Norman Dean to Center employees Lois Saboe and Philip Bogdonoff, Dean tried to make sure that all three were "on the same page with respect to the report card."[1407] Dean identified the report card as "one of the Center's highest priorities in the next 6 weeks is the distribution and use of our Y2K Report Card."[1408] To achieve this, Dean laid out five primary goals for Saboe and Bogdonoff to work towards: first, to work with groups in the "40 largest cities" to get them to fill out a report card on their city with the goal of having those results completed "by September 8"; second, holding at least one teleconference to put the groups working on the report cards in communication so they could "share information, identify obstacles, and work to overcome those obstacles"; third, compile the completed report cards into a "national summary of community readiness" that could be distributed to the media, a report that needed to be "completed by September 17"; fourth, to work with the public relations firm Porter Novelli "on a press release and press strategy"; and fifth to "distribute 5,000 copies of the report card" by calling upon the various groups with which The Center had some connection.[1409] Additional funds were authorized to enable Saboe and Bogdonoff to implement these goals, with

[1405] Ibid.
[1406] Ibid.
[1407] "Memorandum. Re: Plan for Report Card Project." August 11, 1999. CBI 155, Box 2, folder "Report Card." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.
[1408] Ibid.
[1409] Ibid.

Dean closing his memorandum by noting "This is one of the Center's most important projects and I look forward to working with you to make it a success!!!"[1410]

Two days after Dean's memorandum, a planning document on the report cards, laid out the Center's goals and established a timeline for moving forward.[1411] As The Center put it to itself, there were two "primary goals," namely: promoting the report card "as a community assessment tool such that it gets into the hands of the people and organizations that can best put it to use to galvanize their communities to prepare for Y2K" and "to reach the people and groups in our list of 'top 40 cities' who can complete the Report Card" with the hopes of reaching people who could complete it in time for the results to be included in a "national survey" that was ostensibly to be released "around September 17th."[1412] As is perhaps not surprising for a nonprofit that itself gave out grants, success was to be quantified and measured, based largely around the dissemination of the report card as measured not only in the "# of Report Cards Completed" but also based on the "# of people/organizations who have Report Cards", how many were coming to the report card section of The Center's website and downloading the report card from there, and though The Center was clearly interested in working with a range of community groups success would also be measured based on the "# of people/organizations…who are mainstream organizations (like the Red Cross, United Way, etc. who have solid credibility)."[1413] The Center had a lengthy list of "target audiences," with the most highly prioritized groups being "community service agencies…community Y2K project coordinators…emergency management organizations…groups like the National Governors

[1410] Ibid. All three exclamation points are in the original memorandum.
[1411] "Y2K Community Report Card Project. As of 1999.08.13." August 13, 1999. CBI 155, Box 2, folder "Report Card." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.
[1412] Ibid.
[1413] Ibid.

Association" as well as the range of organizations with which The Center was affiliated as well as the groups involved in sponsoring the Clinton Administration's Y2K Community Conversations.[1414] Though they made the list, "elected officials and other civic leaders" fell into the "B" group of "target audiences" while "grassroots activists" were in the "C" group. There was a tight timeline for the project, one that involved preparing targeted messages to a range of groups to solicit and encourage their participation. By August 18, The Center would "start disseminating the message" and the initial deadline for getting responses back was to be September 1.[1415] Rather than a one-off matter, the report cards were framed as a back and forth between results coming in which would in turn be used for press releases and surveys, which could then result in another round of report cards coming in (and earlier report cards being updated), which in turn would result in another round of press releases and surveys—with the initial timeline predicting that there would be a press release and update offered in each of the final four months of 1999.[1416]

On September 20, 1999 The Center issued a press release with the auspicious title "Organizations in 37 U.S. Communities Deliver an Average Grade of 'C' on Y2K Community Report Card," which noted that "with just over 100 days remaining" the Center's report card made clear "that communities around the country still face significant gaps in local readiness."[1417] The press release stated that the Center had demonstrated around 10,000 copies of the report card with plans to "distribute an additional 20,000 in the coming weeks."[1418] As for the

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[1414] Ibid.
[1415] Ibid.
[1416] Ibid.
[1417] "Organizations in 37 U.S. Communities Deliver An Average Grade of 'C' on Y2K Community Report Card." September 20, 1999. CBI 155, Box 2, folder "Report Card." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.
[1418] Ibid.

cities that had already submitted results, these included "Austin, San Diego, Indianapolis, New Orleans, Tampa, Providence, R.I., San Francisco, Seattle and New York" with many "smaller communities" also having responded and with responses coming in from a mix of "Red Cross chapters, emergency managers, city Y2K coordinators, hospitals, nonprofits and community groups."[1419] While the overall grade of 'C' meant "that only about half the goals for community readiness outlined in the report card have been met" the press release emphasized particular concern around "the availability of key food stocks and supplies;" the lack of contingency plans for providing funds "to healthcare institutions", providing "preparedness information to individual households;" as well as making sure that nursing homes were prepared for possible disruptions. Within the press release, Phyllis Mann, the president of the International Association of Emergency Managers (IAEM) praised the report card as "a great test for our emergency managers to use…They need to be prepared to answer these questions."[1420] Though the press release also hinted at one of the challenges in making sense of the grades, namely that "assessments from community groups and nonprofits tended to grade lower than official governmental responses" which spoke to the differences in information available to each group.[1421]

While the press release alluded to certain key points and information, a much more robust assessment of the first round of report cards could be found in the report "The Y2K Readiness of America's Communities: September 1999 Status based on Y2K Community Report Card" which

[1419] Ibid.
[1420] Ibid.
[1421] Ibid.

was publicly available on the Center's website.[1422] The report provided a similar summary to the information that had been conveyed in the press release, but delved significantly deeper both in terms of overall analysis and in terms of couching many of the findings in a more nuanced stance. Framing the 37 received responses, the report noted that the Center had started by sending the report cards directly to the mayors of the fifty-seven most populous cities, with the Center then taking active steps to reach out to numerous organizations to solicit their responses—as the number completed made clear, only a fraction of those groups responded, though the report also stated that the Center had heard from more than two dozen communities that would be submitting their results shortly.[1423] The core finding was, of course, the average grade itself, the "C" which meant "only half the goals for community readiness have been met and that a lot of work still needs to be done." As an average, the "C" represented a range, one which revealed "wide disparities" across communities—of the thirty-seven report cards that fed into the average the most common grade had been a "B," but the second most common grade had been a "D," and though there were an equal number of "A" and "C" grades submitted, there were also several "F's" in the mix.[1424] Despite the attention getting function of assigning a grade, the Center's report carefully acknowledged what the "summary report does and does not do," noting that the "report establishes *a baseline*…shows participation" and only included "Report Cards

[1422] "The Y2K Readiness of America's Communities: September 1999 Status based on Y2K Community Report Card." September 20, 1999. . CBI 155, Box 3, folder "Report Cards." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota. As has been previously noted, there are multiple folders titled "Report Card" or "Report Cards" in this collection. In this case, the folder is a manila folder with the folder name appearing on a sticker on the tab. The top of the sticker has a thick blue line (part of the sticker) broken in three places by white vertical lines (part of the sticker), while the words "Report Cards" is written in blue pen, a staple cuts into the "d" in Cards and obscures much of the "s."
[1423] Ibid.
[1424] Ibid.

that communities have chosen to make public."[1425] And despite the Report Card's own insistence on independent audits and "trust but verify," the report noted that the information being used for the summary report "is *not* an independent, statistically valid verification of the Y2K readiness of the communities represented."[1426] Considering that filling out and submitting the report card was "voluntary and grades are self-reported" the Center acknowledged that it did "not expect to obtain a sufficiently unbiased sample upon which to extract statistically valid conclusions."[1427] Furthermore, in what may have been the most significant observation, the report acknowledged the discrepancy between grades submitted by "public officials" and those submitted by "unofficial groups" that saw the latter tend to assign harsher grades.[1428] Even as the report carefully couched its analysis in a recognition of the shortcomings of the available data, it still offered a variety of takeaways that pointed to areas—like "backup plans for paying healthcare providers" and "readiness of nursing homes" and "auditing of sewage treatment plants"—that were held up as areas of concern, and the report also conveyed a worry that "few communities are involving those who may be most affected by Y2K."[1429] While there were eleven bullet pointed observations that fell beneath a heading of "We are concerned:", the report was meant as a baseline—the assessment could be altered as "more Report Cards are submitted" and as the groups that had submitted their report cards sent in updated assessments.[1430]

[1425] Ibid. Italic text in original report.
[1426] Ibid. Italic text in original report.
[1427] Ibid.
[1428] Ibid.
[1429] Ibid.
[1430] Ibid.

The baseline had been set in the report issued on September 20, 1999 and on November 4, 1999 the Center issued a follow up summary report.[1431] Since the previous report, the number of communities that had now submitted grades had risen to 55, and what's more the average grade had changed as well, going from a "C" to a "C+."[1432] At this point the responses included results from "26 cities with a population of 250,000 or more and 29 smaller communities with populations less than 250,000" and these communities represented results from "28 different states."[1433] The report noted that "wide disparities in levels of Y2K preparedness continue to remain in communities across the United States" and though by the time of this second summary report "there are more A's…there are also more D's."[1434] The second summary report features many of the exact same qualifiers as had been present in the previous report regarding the lack of "independent, statistically valid verification" but maintained that the gathered information could still provide a useful snapshot, particularly as the information came from such a variety of cities across more than half of the states.[1435] In terms of findings and key takeaways, the summary noted that "Many communities are making an earnest effort to prepare," but added that the only slight improvement in grades suggested "The areas that were being neglected in mid-September are still being neglected."[1436] With the summary report adding "The systems that serve the poor and vulnerable are still lagging."[1437] While the report acknowledged that answers not being

[1431] "The Y2K Readiness of America's Communities: November 1999 Status based on Y2K Community Report Card." November 4, 1999. CBI 155, Box 2, folder "Report Card." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota. As has been repeatedly noted, there are multiple folders in this collection (indeed multiple folders in a single box) called "Report Card." In this case the folder was a manila folder with the word "Report Card" written on the tab in blue pen. This copy of the November 4, 1999 was the only content present in this folder.
[1432] Ibid.
[1433] Ibid.
[1434] Ibid.
[1435] Ibid.
[1436] Ibid.
[1437] Ibid.

"available for all of the questions" lowered scores, this was warranted as the lack of information was itself concerning.[1438] In terms of "national trends" the survey remained concerned about the same areas as had been highlighted in the previous summary, though these concerns were only heightened by the fact that less than two months remained until the fateful deadline.[1439] Some interesting details emerged in the differences between the "larger" and "smaller" cities with the "larger" cities seeming to be doing slightly better (averaging a "B") at "preparing in the public safety and environment category" ("smaller" cities averaged a "C"), and with "larger" cities seeming to be better at securing "written agreements" regarding the continuation of some key services, while "smaller" cities seemed to be hold more "regular Y2K public planning meetings," though half of each type of city claimed "to have distributed Y2K materials to each household."[1440] And this second summary report continued to show a discrepancy in the grades submitted by "official" agencies and those submitted by "unofficial" groups which suggested that "those in the wider community are not aware of what has been done by a city."[1441]

Despite the hope expressed in the November summary report that more communities would soon be submitting their report cards, when the final summary report was issued on December 3, 1999 it was still only based on the results from 55 U.S. communities.[1442] While communication with those who had filled out the report cards had continued, as had outreach on the part of the Center, between November and December there appeared relatively insubstantial

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[1438] Ibid.
[1439] Ibid.
[1440] Ibid.
[1441] Ibid.
[1442] "The Y2K Readiness of America's Communities: December 1999 Status based on Y2K Community Report Card." December 3, 1999. CBI 155, Box 8, folder "Steering Comm. Meeting. 12/14/99 Binder" Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota. The report was included as one of the documents included in the Steering Committee's Binder.

progress, and as a result the average grade held steady at a "C+."[1443] The primary areas of concern remained the same, alongside the overarching observation that "minorities and the underserved are often not included in the planning and preparation process and that on average, public officials rated their communities at least one grade higher than graders from other organizations and citizen groups."[1444] In many respects the summary report from December appears nearly identical, if not actually identical, to the report issued in November. While the initial summary report issued in September had been intended to provide a "baseline" against which future summaries could be measured, the December report suggested not too much deviation from that baseline—the overall findings, observations, concerns, and recommendations were largely the same—the difference was that all of those concerns took on an added weight once there was less than a month left before the deadline.

While the final grades themselves, especially in their average form, presented in the summary reports conveyed a fairly straightforward assessment—the actual report cards convey a far more complex, nuanced, and at times contentious view. Though the summary reports may make it seem as though the Center was simply aggregating and calculating the data that had been sent to them, the material that makes up the report cards tells a more complicated story, which is not to suggest the summary report's misrepresent the report cards they received, but only to note that for all of their supposed clarity assigning grades in such a manner is much more complex than a final average grade of a "C" and then a "C+" may suggest. The report card materials themselves vary widely from community to community, with some communities providing relatively little in the way of information beyond the report card itself, even as other

[1443] Ibid.
[1444] Ibid.

communities also provided robust evidence of all of their various Y2K related readiness activities. In some cases, communities were content to simply answer the questions with a straightforward "yes" or "no" (or a simple check mark), tally the grades and submit them, while other communities provided lengthy explanations alongside the rating of "yes" or "no," while some other communities shifted the grading criteria to enable themselves to assign half-points, and still others chafed at grading altogether. And in some cases the report card that was received from a community group and subsequently posted on the Center's website drew a swift and angry rebuke from local officials in that area.

In a letter that was faxed in along with the graded report card, Diana Rutala the Department Head of Administrative Services for Atlantic County, home of Atlantic City, NJ, provided a quick overview of what had been done by the Atlantic County Government.[1445] Stating that they had begun their "Y2K campaign back in 1997," Rutala assured Bogdonoff (to whom the letter was addressed) that the County had "held meetings…posted a website and published brochures and media releases."[1446] Furthermore, Rutala further noted that the County's "computer systems have been converted and tested" and contingency planning had been conducted, such that the County was "confident we will be able to respond to any disruptions."[1447] And as for the report card itself, Rutala gave Atlantic County a cumulative grade of 26 out of 30, an A—and next to one of the few areas to which Rutala did not provide an affirmative check she handwrote a note stating that particular issue was "to be addressed by the

[1445] "Atlantic County. Department of Administrative Services." September 13, 1999. CBI 155, Box 9, folder "Atlantic Co. NJ." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.
[1446] Ibid.
[1447] Ibid.

State of NJ."[1448] An even briefer response was obtained from Indianapolis, IN where the report card was faxed in from the Emergency Management Division of Marion County.[1449] Prepared by the city's "Y2K Project Mgmt. Office," the report card sent in provided little in detail or analysis beyond checked off boxes—though next to the "Especially Vulnerable Persons" section was included a comment that these aspects were "Already incorporated in existing emergency plans."[1450] Indianapolis assigned itself a cumulative grade of 28 total points, and though they did not take the step of turning this into a final grade, based on the Center's rubric a 28 was sufficient to earn an A.[1451] Minneapolis was another city that supplied a rather clipped response, with Paul Willig, a consultant within the City's Y2K Program Office, submitting a report card featuring barely any information beyond the point totals—the "x's" he placed on the report card marked the few "no's" on this report card that assigned Minneapolis a score of 28/A.[1452] Granted, it was not only cities that had their officials fill out the form where such minimal information was returned. The Five Rivers Chapter of the American Red Cross, located in Gallatin County, MT submitted their 21/B with little extra detail—though they noted some of the "Individual and Neighborhood Preparedness" steps were happening "Through Red Cross."[1453] Similarly the United Way of the Texas Gulf Coast, located in Houston, TX, faxed in 16/C report

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[1448] Ibid. The scores Rutala assigned were: Planning 5, Individual and Neighborhood Preparedness 4, Healthcare 3, Especially Vulnerable People 5, and Critical Community Services 4.
[1449] "Y2K Community Report Card." August 28, 1999. CBI 155, Box 9, folder "Indianapolis, IN" Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.
[1450] Ibid. The scores in this report card were: Planning 5, Individual and Neighborhood Preparedness 3, Healthcare 5, Especially Vulnerable People 5, and Critical Community Services 5.
[1451] Ibid. The report card submitted by Indianapolis leaves the "Final Grade" section blank.
[1452] "Y2K Community Report Card." September 1, 1999. CBI 155, Box 10, folder "Minneapolis" Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota. The scores in this report card were: Planning 5, Individual and Neighborhood Preparedness 4, Healthcare 4, Especially Vulnerable People 5, and Critical Community Services 5.
[1453] "Y2K Community Report Card." September 8, 1999. CBI 155, Box 9, folder "Gallatin CO. MT." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota. The scores in this report card were: Planning 5, Individual and Neighborhood Preparedness 3, Healthcare 3, Especially Vulnerable People 3, and Critical Community Services 4.

card that was festooned with asterisks noting that "items marked with [asterisk] were not able to be confirmed."[1454] While still other places sent in curt responses not featuring the report card but stating that they would not be filling out the report card at all; case in point Marc Abraham of the City of Cleveland Year 2000 Project sent Norman Dean a letter on City of Cleveland letter head commending the Center but noting that as Cleveland's "Y2K team…has been dedicating every spare minute to our Y2K activities" they were "unable to complete your report card," though this was followed by assurances that Cleveland had "made steady progress and expects to be ready for whatever challenges the new year may bring."[1455]

Such brief responses were not uncommon, but they are far from the only sorts of responses that the Center received. If the lack of information supplied alongside the report cards by some communities could feed into the summary report's acknowledgement that they did not always have much to go on beyond the word of those who had submitted the report, in other cases plenty of information was supplied to support the assessment. And the size of a city is not in itself a predictor as to the amount of information that would be supplied. On behalf of the city of Ames, IA, Sheila Lundt provided the city's report card of 24.5/A—a report card that featured some handwritten embellishments noting for example that when it came to nursing homes they were "state monitored & licensed."[1456] However, Ames also provided significant additional information to the Center that served to provide support for Lundt's optimistic grades. Case in

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[1454] "Y2K Community Report Card." September 1, 1999. CBI 155, Box 9, folder "Houston." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota. The scores in this report card were: Planning 0, Individual and Neighborhood Preparedness 0, Healthcare 2, Especially Vulnerable People 3, and Critical Community Services 4.

[1455] "City of Cleveland." September 9, 1999. CBI 155, Box 9, folder "Cleveland." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.

[1456] "Y2K Community Report Card." October 18, 1999. CBI 155, Box 9, folder "Ames, Iowa." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota. The scores in this report card were: Planning 3.5, Individual and Neighborhood Preparedness 3, Healthcare 4, Especially Vulnerable People 5, and Critical Community Services 4.

point, Ames provided a copy of a "Y2K Preparedness Survey" from "May 1999" filled out by the "Ames, IA Water + Pollution Control Department,"[1457] a copy of a presentation given "For Water and Wastewater Operators" from April 1999 describing "The Ames, Iowa Approach to Y2K Preparations,"[1458] a copy of the "City of Ames Disaster Response Plan" on the front of which a handwritten note read "(Would apply to Y2K problem),"[1459] and multiple copies of a "City Side" newsletter that was "(mailed to all utility customers in Ames)" that detailed the work being done to ensure Ames's utilities were ready for Y2K.[1460] Similarly, along with its somewhat lackluster 15/C report card that was filled out by the "Regional Plan Assoc," New York City's Y2K related materials conveyed that much was being done despite the rather lackluster C grade.[1461] A full color pamphlet—its cover emblazoned with a view of the Brooklyn Bridge and the Twin Towers—titled "Prepared to Meet the Challenges of Y2K"—stated that though the city did "not expect widespread Y2K related problems…our agencies are taking the necessary precautions to continue the delivery of essential services" this comment was presented alongside a "personal preparedness checklist" and a list of websites and numbers a person could use to obtain further information on NYC's readiness.[1462] Beyond this public facing pamphlet—that was a testament to NYC's public outreach activities—there were also print outs from Y2K

[1457] "Y2K Preparedness Survey—May 1999 Update. AWWA-AMWA-NAWC." June 15, 1999. CBI 155, Box 9, folder "Ames, Iowa." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.
[1458] "The Ames Iowa Approach to Y2K Preparations." April 28, 1999. CBI 155, Box 9, folder "Ames, Iowa." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.
[1459] "City of Ames Disaster Response Plan." October 18, 1999. CBI 155, Box 9, folder "Ames, Iowa." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.
[1460] "City Side." CBI 155, Box 9, folder "Ames, Iowa." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota. There are copies of the "City Side" newsletter for November/December 1999 and December 1999/January 2000 included in the folder.
[1461] "Y2K Community Report Card." September 1, 1999. CBI 155, Box 10, folder "New York City." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota. The scores in this report card were: Planning 3, Individual and Neighborhood Preparedness 2.5, Healthcare 2.5, Public Safety and Environment 1.5, Especially Vulnerable People 2.5, and Critical Community Services 3.
[1462] "Prepared to Meet the Challenges of Y2K." ND. CBI 155, Box 10, folder "New York City." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.

section of the city of New York's website, which included a lengthy explanation of the city's contingency plans, a copy of Deputy Mayor for Operations Joseph Lhota's August 13, 1998 Congressional Testimony from the hearing on "State and Local Preparedness for the Year 2000.[1463]

While the Center was particularly interested in obtaining information from city officials, the Center also received plenty of robust responses from community groups. As a representative of The Monroe County Y2K Action Group in Bloomington, IN, Michael Redman not only provided the Center with answers to the report card, he also provided a robust assortment of documents attesting to the overall activities of The Monroe County Y2K Action Group. Redman began his submitted report card with a note that he was "returning the report card with answers but ungraded because we find it impossible to answer the questions with a 'Yes' or 'No' as many of the activities are partially completed" while "Other questions ask for information outside our knowledge."[1464] In explaining the decision not to supply specific grades, Redman made a direct allusion to the fact that the report cards that had been submitted thus far "fall into two basic categories" with officially graded report cards scoring well and community graded report cards scoring less well—and it seems that Redman hoped to keep his group above that fray, even as the answers he submitted painted a dreary portrait of Bloomington's readiness. Nevertheless, there was ample proof of activity in Bloomington, and Redman noted that "Much of the Y2K organization work in his community has been done by the MCY2K which began its efforts in

[1463] CBI 155, Box 10, folder "New York City." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.
[1464] "Bloomington, IN. Community Y2K Report Card Addendum." October 25, 1999. CBI 155, Box 9, folder "Bloomington, IN." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.

Jan. 1999 with the Red Cross and the endorsement of the Monroe County Commissioners."[1465] The Center obtained multiple materials showing the activities in Bloomington including: a trifold brochure created and disseminated by the Monroe County Y2K Action Group (which encouraged people to "check out the Y2K Resource Binder on reserve in the Indiana Room of the Monroe County Public Library"), a flyer for an installment of the Clinton Administration's "Y2K Community Conversation" program that the MCY2K was helping sponsor, and copies of MCY2K sign up materials that encouraged others to get involved.[1466] And alongside all of these documents pointing to the work being done by MCY2K there were also numerous copies of articles on Y2K that Michael Redman had written for the local *Bloomington Independent*, and a copy of Redman's 22 page "Y2K What it Means to You" which began with a statement that "US Senate Y2K Report not encouraging."[1467]

Bloomington was not the only city that saw its report card being filled out by the very sorts of community groups that the Center had been working to build connections with since its founding. In the initial version of the report card they submitted Nashville PREP 2000 faxed in a report card giving Nashville a 12/D, which in lieu of returning the actual report card form consisted of a text document that allowed for a bit more in the way of explanation.[1468] Nashville PREP 2000 supplied the Center with a variety of supplementary materials including a videotape featuring news clippings and coverage from local news that had featured members of the

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[1465] Ibid.
[1466] CBI 155, Box 9, folder "Bloomington, IN." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.
[1467] CBI 155, Box 9, folder "Bloomington, IN." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.
[1468] "Y2K Community Report Card." September 14, 1999. CBI 155, Box 10, folder "Nashville." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota. The scores in this report card were: Planning 2, Individual and Neighborhood Preparedness 2, Healthcare 1, Public Safety and Environment 2, Especially Vulnerable People 3, and Critical Community Services 2.

Nashville PREP 2000 group, and the Center also obtained print outs of numerous Y2K related articles that had appeared on the website of The Tennessean, as well as print outs from Nashville PREP's website—on which the Center was thanked for its financial support of the group.[1469] Perhaps most significantly, Nashville also provides a clear case of a community where the grades were updated and where the grades were a matter of some disagreement. In an email from Nashville PREP 2000's director Nell Levin dated December 20, 1999 (too late to be included in any of the summary reports), Levin provided an updated report card along with a press release—and she pointed to a joint briefing held by "the mayor and OEM, along with the fire, police, etc." showing "at least we succeeded in getting their attention."[1470] Levin included a press release, dated December 13, 1999, that noted Nashville PREP 2000 and Nashville's Office of Emergency Management had jointly prepared an updated report card—though "OEM gave Nashville an A while Nashville PREP gave the city a B-."[1471]

The joint report card issued by the city and by a grassroots organization in Nashville indicate the ways in which the grades could be a matter of some disagreement between groups. This was a matter that the Center had fully acknowledged in its summary reports that had clearly acknowledged the discrepancy in grades between official sources and community groups. Nevertheless, in at least some cases, this discrepancy gave rise to a great deal more conflict than was seen in Nashville's case. Boston's report card was prepared by the Horizon Information Group, and the grade that it submitted for the city was a fairly dismal 13/D.[1472] And after the

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[1469] CBI 155, Box 10, folder "Nashville." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.
[1470] "Lois Saboe – Re: FWD: Report Card." December 20, 1999. CBI 155, Box 10, folder "Nashville." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.
[1471] Ibid.
[1472] "Boston, MA. Community Y2K Report Card. Addendum." November 4, 1999. CBI 155, Box 9, folder "Boston." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota. The scores in

Center posted that information on its website they fairly quickly received a very stern response on official letterhead from the city of Boston.[1473] Sparing no subtlety, the letter stated "City officials were appalled to see this inaccurate, misleading and unconfirmed report posted on your web site" emphasizing that the person who had submitted the results "is not authorized to speak on behalf of the city."[1474] Describing the posting of the report card as "utterly reckless and irresponsible" the letter added that "it could generate hysteria among the general public" and demanded that the offending information be removed and replaced with a disclaimer that included a link to Boston's Y2K webpage alongside a threat that "Failure to comply with this demand will leave me no choice but to take further action."[1475] Though it did not reach the same level of threatening frustration as had been seen in Boston, Oakland was another place where the publication of a report card from a community group resulted in an official response from the city. Granted, in the case of Oakland this may have been particularly awkward considering that the community group in question was Oakland 2001 with which the Center had a close working relationship (especially with its leader Rosa Zubizaretta). The report card that had been submitted by Zubizaretta on behalf of the community group Oakland 2001 gave Oakland a grade of 15/C.[1476] This in turn resulted in a response featuring "a new updated report card" that had been filled out by the Office of Emergency Services, and which featured a comment that "the report card submitted to your office in September was the opinion of one individual, Ms Rosa

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this report card were: Planning 4.5, Individual and Neighborhood Preparedness 1, Healthcare 3.5, Public Safety and Environment 2, Especially Vulnerable People 1.75, and Critical Community Services 2.

[1473] "Dear Ms. Saboe." CBI 155, Box 9, folder "Boston." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.

[1474] Ibid.

[1475] Ibid.

[1476] "City of Oakland, CA. Community Y2K Report Card. Addendum." September 17, 1999. CBI 155, Box 10, folder "Oakland." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota. The scores in this report card were: Planning 2.75, Individual and Neighborhood Preparedness 3.75, Healthcare 2.75, Public Safety and Environment 1, Especially Vulnerable People 2, and Critical Community Services 1.

Zuibzaretta," and though the note acknowledged that Zubizaretta was "involved on the City's task force" the Office of Emergency Services made it clear that they did "not believe nor…support [Zubizaretta's] comments on the original submission."[1477] And thus the Office of Emergency Services for Oakland provided its own report card on which the grade was a 23/B.[1478]

Throughout the report card process, the Center was not a disinterested party simply sitting by the side and aggregating the data that was coming in. Rather, the Center (particularly Saboe and Bogdonoff) played a very active role in contacting the cities, soliciting more information, and trying to get updated results in order to improve the assessments. It was not only that the Center had started its report card campaign by sending letters to city mayors at the end of August 1999 providing them with a copy of the report card and encouraging them to fill it out for the sake of "disseminating good information" regarding their city's "local readiness for 'Y2K.'"[1479] It was also that the Center continued to play an active role in soliciting more information. The report card materials for the city of Tampa, FL did not provide the Center with a mountain of supporting documents regarding its grade, but what makes that city's submission noteworthy is that the grades were submitted with a letter that attests to the report card as a serious group effort—and which shows the involvement of the Center in getting the grades.[1480] Multiple report cards were submitted for Tampa, and these were clearly brought together thanks to the coordination and communication work that Lois Saboe did and speaking with a range of Tampa representatives, with Saboe clearly alluding to phone conversations she had with some of

[1477] "Y2K Community Report Card." December 1, 1999. CBI 155, Box 10, folder "Oakland." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.
[1478] Ibid. The scores in this report card were: Planning 5, Individual and Neighborhood Preparedness 4, Healthcare 2, Public Safety and Environment 4, Especially Vulnerable People 4, and Critical Community Services 4.
[1479] "Time Sensitive Request." August 23, 1999. CBI 155, Box 6, folder "Report Card—Letter to Mayors." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.
[1480] "Dear Ms. Sabo." September 1, 1999. CBI 155, Box 10, folder "Tampa." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.

the individuals, even as she then asked others involved in the process to help her reconcile discrepancies between answers.[1481]

Granted, in many of the cases where it seems that the Center tried to pursue information it appears that the efforts secured little in the way of results. And in still other cases there is evidence of some regrettable communication breakdowns. Such was certainly the case with Boston wherein handwritten notes from a conversation between Saboe and a representative from Boston features comments such as "don't have control over" and "puts Boston at disadvantage" and "survey unfair for us to answer."[1482] And that discussion was pointed to with frustration in the accusatory letter sent by Boston representatives after the Center had published a report card for Boston, with that letter accusing the Center of posting information that "was entirely inconsistent" with what had been agreed upon in that conversation. While the Center had launched its campaign by writing to mayors, it continued to write to them after the initial report cards were issued, following up with those who had "completed earlier in the year" their report cards and asking them for any updates as the Center prepared its summary reports.[1483] At every step of the report card process, the Center was consistently striving to get more information.

In a report by Norman Dean published on September 22, 1999—shortly after the first summary report on the report cards had been issued and with only 100 days remaining—Dean

[1481] CBI 155, Box 10, folder "Tampa." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.
[1482] "Julia Ross." ND. CBI 155, Box 9, folder "Boston." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.
[1483] "Re: Urgent Request for Y2K Report Card Update by December 3, 1999." November 23, 1999. CBI 155, Box 10, folder "New York City." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota. Copies of this letter can be found in numerous folders.

sought to "highlight those areas which continue to face the greatest risks of Y2K problems."[1484] In assessing the state of the situation and the existing dangers, Dean pointed to "three pervasive Y2K themes," namely: "Too Many Unknowns," "Too Little Verified Information," and "Too Many Last-Minute Fixes."[1485] And while the matter of the "last-minute fixes" was certainly a matter of worry for the Center, with its report cards the Center was at least trying to do something to address the "unknowns" even as it wound up helping to create more information that was not exactly verified. Dean pointed to an assessment made by the GAO from July that had "found that only 2 cities were fully prepared for Y2K" and as he put it those "findings are being confirmed" by the Center's "Y2K Community Report Card project…A preliminary review of 35 cities found that the overwhelming majority have major gaps in their programs to prepare for Y2K."[1486] Yet the grades that were given by the Center, much like the grades assigned by Representative Horn, in many respects only furthered the sense of uncertainty and confusion that they sought to dispel with their straightforward graded assessment. After all, a "C" is often a passing grade. Not a very high passing grade, but a passing grade nevertheless. What then would a "C" mean in terms of Y2K? And this was clearly a sentiment shared by some of those groups that participated in the report card project, and was cited as a reason that others were hesitant to participate. As the Director of the Office of Emergency Management for Austin, TX put it in an email to Saboe explaining a decision "not to submit," it was noted "At this point I really do not believe that trying to give a simple A, B, C grade to the enormously complex task of preparing

[1484] "100 Days and Counting: Too Many Unknowns, Too Little Verified Information and Too Many Last-Minute Fixes." September 22, 1999. CBI 155, Box 2, folder "Center for Y2K & Society." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.
[1485] Ibid.
[1486] Ibid.

local governments and communities for Y2K is a meaningful goal."[1487] Even though such a hesitancy to respond provides further evidence of one of the most significant things that the report cards revealed, namely: that those in official roles were operating on very different information from what was available to the public at large, and that information was not always being fully conveyed to the broader public. Hence the attempt by the Center to step in to try to bridge that information chasm.

In the report card, the Center had posed the question of "What Does It Mean to Prepare for Y2K?" and the results that the report card garnered demonstrate that preparing for Y2K could look like and mean many different things.[1488] And even then, there could still be a lot that was left unclear. In seeking to answer the question of what preparedness meant, the Center stated "Ultimately, the best preparation for an unknown future is a strong community where people know each other and know how to work together well in an open and democratic fashion."[1489] Though ultimately what the report cards may have revealed most clearly is just how difficult it is to create and sustain such communities.

Conclusion

"Whatever perils our human ambition and shortsightedness may have caused, our even more powerful human spirit will find a way to overcome them,"[1490] at least Leonard Nimoy felt confident of that. Yet rather than be satisfied with the view that the "human spirit" could get out

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[1487] "After carefully reviewing…" August 31, 1999. CBI 155, Box 10, folder "Austin." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.
[1488] "Is Your Community Prepared? A Y2K Report Card." ND. CBI 155, Box 2, folder "Report Card." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.
[1489] Ibid.
[1490] Leonard Nimoy. "Foreword." ix.

of whatever messes "human ambition" had landed the species in, he framed Y2K as more than just an annoying blunder that would be overcome. As Nimoy stated, "Let us use the Y2K problem as an opportunity to reflect on where we are headed as a civilization."[1491] And lest there could be any doubt about what Nimoy meant by this statement he went on to add "If the omission of two simply digits can have worldwide impact we must ask ourselves—before we rush too far forward: 'What are we doing with genetic engineering, cloning, bacteriological warfare, death ray technologies, and pollution of the planet? What can we do as the inheritors and caretakers of this world to protect our home, our island in space?'"[1492] And Nimoy's question of "what are we doing" was at the core of the concerns percolating amongst many individuals and community groups that were watching Y2K with trepidation.

Granted, this question of "what are we doing," was posited in two overlapping but nevertheless distinct registers. There was the question of "what are we doing" as it regarded the actual preparation work that was taking place surrounding Y2K, and then there was the "what are we doing" as it regarded a more philosophical question about what the embrace of the computer had done and was "doing" to society.

In terms of the first "what are we doing," one of the central challenges confronting individuals outside of the technical world and community activists was that they were simultaneously overwhelmed by information and suffering from a dearth of information. As this chapter has shown, this challenge was made clear in the efforts of various figures to extrapolate from their sources in order to try to present the sort of clear conclusions many of those sources were wary or making. Whether it was religious writers couching their claims in the technical

[1491] Ibid.
[1492] Ibid.

qualifications of people like Peter de Jager, Capers Jones, Ed Yourdon, and Leon Kappelman, or community activists backing up their preparedness advice with references to the Red Cross and FEMA, or whether it was the common strategy of drawing on the words of Senator Bennett, Representative Horn, or pointing to the less than reassuring commentary coming out of official government reports—those who were not personally involved in performing, or overseeing, the technical work of Y2K fixes had plenty of information to draw on. And though these sources provided lots of details regarding the work that was being done, the tendency of those same sources to emphasize how much work remained to be done, meant that the focus remained on the "doing" and never became a reassuring and conclusive "done." In many cases, a certain level of distrust towards the government led to a degree of skepticism being expressed towards government sources—even as they were cited. Furthermore, as the report cards from the Center for Y2K and Society make clear, in many cases there really was an informational gap that existed between government sources and the communities they served—that local governments graded themselves higher than community activists graded them may have had some self-serving elements, but it also expressed a genuine gap in awareness about what all was really happening.

And yet the deeper "what are we doing," the version of the question that seems to lay beneath so much of the Y2K concern, is the deeper question of not just would the computers keep working, but what it meant to live in a world that was now so reliant on such machines. Nimoy had described the late 1990s as "one of the greatest periods in human history…an exciting time to be alive. We are enjoying unbelievably rapid advancement in technology,"[1493] and yet many others did not seem to exactly share Nimoy's excitement and seemed willing to question whether or not "enjoying" was really the best word to use to describe living amongst so

[1493] Ibid.

many technological advancements. In *Millennium Meltdown*, Grant Jeffrey had narrated Y2K largely through a lens of biblical prophecy, and yet even as he acknowledged how "every aspect of our modern society is now dependent on complex computer calculations" he suggested that Y2K might raise "a critical question" as to whether or not people around the world would "continue to complacently trust in the accuracy of computers after the beginning of the new millennium?"[1494] And as he saw it, "It is entirely possible that hundreds of millions of people will strongly reject the computer systems of the new millennium in light of their proven failure."[1495] From out of the potential wreckage of Y2K, Jeffrey suggested there might arise "a sober reappraisal of the pros and cons of accepting every single computer technological advance without considering carefully its impact on the quality of life of those affected by the new system."[1496]

Writing in a non-religious register, Eric Utne had lamented that "Most Americans these days live in networks, not communities" but noted that "Y2K is an opportunity to change all this" and it even had the potential to "bring a family feeling throughout the community."[1497] And this sense that Y2K provided an opportunity for a restoration of community ties coursed through preparedness activities ranging from the religiously inflected Joseph Project to the more secularly minded Cassandra Project, and as Paloma O'Riley had testified before the Senate "We need to be reminded that the responsibility to care for ourselves and each other truly and rightly rests with us."[1498] With O'Riley's emphasis on "each other" serving to place the Cassandra

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[1494] Jeffrey. *Millennium Meltdown*. 92.
[1495] Ibid.
[1496] Ibid.
[1497] Utne. "I Am Because We Are." 14.
[1498] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Community Preparedness: Is There News They Can Use?* "Testimony of Paloma O'Riley, Cassandra Project on 'Individual and Community Preparedness for Y2K.'"

Project's ethos squarely in a world of conviviality and mutual aid instead of an alienated and anonymized world where people just needed to look out for themselves while believing that emergency services would always be there and ready to swoop in and save them. As O'Riley emphasized repeatedly, in a world in which so many functions of daily life had become dependent on complex computer systems the possibility that such systems might fail, revealed that at base "The best security is a prepared neighbor."[1499] A point which Utne broadened to argue "Treat your neighbor like family, as best you can, and treat the rest of the world like your neighborhood."[1500] And this focus on technological interconnection as cause with human interconnection as the only solution was driven home by Tom Atlee; as he put it "if there is a major collapse of infrastructure, the people you are going to be dealing with are your neighbors"—so the time to start building those connections was before such "a major collapse" could occur.[1501] Yet Atlee situated this in a hopeful, even optimistic stance, noting "At the end of this journey together, we'll have a very different world" but to this he added "If we all do our part, it may just be the world we've always wanted."[1502]

Pervading many of the discussions around Y2K—including those that took place in government hearings and in media coverage—was a certain sense that the computer had become an all-powerful force, albeit one that still had the potential to fail. And the view that the computer had become all-powerful certainly made some wary that the computer was being treated as a sort of replacement for the almighty. Thus, Hutchings and Spargimino had clearly had the Christian God in mind when blasting how "The nations have made the computer their

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[1499] Charles Babbage Institute. Center for Y2K and Society Records. Box 6. Folder "Paloma O'Riley."
[1500] Eric Utne. "Afterword," in *Y2K Citizen's Action Guide*, ed. Eric Utne (Minneapolis: Utne Reader Books, 1998), 119.
[1501] Tom Atlee. "Your Unique Role in Addressing Y2K: a Personal Checklist" in Judy Laddon; Tom Atlee; and Larry Shook (eds). *Awakening: The Upside of Y2K.* (Spokane: The Printed Word, 1998): 122-127. 125.
[1502] Ibid, 122.

god,"[1503] and yet the sentiment that the computer had become an object of worship was not a fear narrowly constrained to those who were focused on religious practices. Indeed, Margaret Wheatley, who had contributed to the *Utne* guide and *Awakening*, made a similar allusion to the computer as God by noting that "Our ardent worship of technology and science had led to our enslavement" though Y2K might just provide the opportunity to break those chains.[1504] For the likes of Hutchings and Spargimino Y2K was an opportunity to turn away from the computer and to God, while for the likes of Wheatley Y2K was an opportunity to turn away from the computer and towards each other.

Common amongst the individuals and community groups responding to Y2K was a sense that it represented a transitional moment. Not merely a literal dividing line between the twentieth and the twenty-first century, but a deeper question about whether societies would become even more reliant on these complex computerized systems that had now revealed themselves to be surprisingly fragile; or if Y2K could serve as a revelatory moment wherein people assumed a more critical attitude towards the technological changes that many of them had not even realized they had quietly accepted. Though there was a tendency to consider many of the possible Y2K related disruptions in language that was evocative of dangers and destructions, far greater was the sense that out of this crisis could come positive developments: whether these represented a strengthened Church community, or more resilient and convivial small-scale communities where people knew their actual neighbors again. Religious attitudes and romanticism were on display here, but so too was a genuine desire to connect with other people informed by a sense that the computer was pulling people apart.

[1503] Hutchings and Spargimino, *Y2K=666?* 58.
[1504] Margaret Wheatley, "The Amazing Grace of Y2K," in *Just In Case: Dispatches from the Front Lines of the Y2K Crisis*, eds. Michael Brownlee; Barbara Stahura; and Robert Yehling (Novato: Origin Press, 1999): 143-152. 144.

Nimoy had closed his forward with the classic Vulcan saying “Live long and prosper,” yet for many individuals it was not merely that Y2K represented a threat to long life and prosperity, but that it provided an occasion to ask what it meant to “prosper” and what it mean to really “live” in a world dominated by computers.

Conclusion

When it came to predicting what manner of havoc Y2K might actually cause, in lieu of making a definitive statement, many opted instead for presenting a range of possibilities. Thus, in 1997, *Newsweek* had contrasted the "Worst scenario" with the "likely to happen" as it considered Y2K's implications for airlines, manufacturing, banking, medical, nuclear power, military, and government—and though it couched its assessment in an uncertain "no one really knows what will happen" it made a prediction of "Best guess: no apocalypse, but lots of trouble."[1505] In his best-selling *The Millennium Bomb*, Michael Hyatt had treated the idea that Y2K would be a non-event as so unlikely as to be unworthy of serious consideration, and had instead focused on three scenarios ranging from "Brownout" to "Meltdown."[1506] With Hyatt's own assessment being one that found him "assuming at least a twelve month disruption of basic goods and services," though he acknowledged "the point of absolute certainty will never come," and in contrast to his foreboding prediction he noted "There is nothing I would enjoy more than being wrong in my assessment of Y2K."[1507] For its part, in its *100 Day Report*, the US Senate's Special Committee on the Year 2000 Technology Problem, had also refused to make a definitive prediction, choosing instead to criticize the "sensationalists" and those trying to "downplay" with a note that "both extremes are counterproductive and do not accurately reflect what typifies most

[1505] Dante Chinni. "The Sky Is Falling, the Sky Is Falling!" *Newsweek* 129, Iss. 22 (June 2, 1997): 57.
[1506] Michael Hyatt. *The Millennium Bug: How To Survive the Coming Chaos.* (New York: Broadway Books, 1998). 159-181.
[1507] Michael Hyatt. *The Y2K Personal Survival Guide: Everything you need to know to get from this side of the crisis to the other.* (Washington: Regnery Publishing, Inc., 1999). 4-5.

Y2K problems."[1508] And as for what would such "problems" looked like, the Committee hedged, noting only that "The true extent of Y2K failures will match neither the most optimistic nor the most apocalyptic predictions."[1509]

In its surveys of its membership, which was made up of more than a thousand professionals working on Y2K in various capacities, the Washington D.C. Year 2000 Group (WDCY2K) had outlined perhaps the most comprehensive spectrum of possible Y2K scenarios. These ranged from a Level 0 boiling down to "It's all a false alarm" through Level 5 that might feature "A sharp, short recession, combined with isolated infrastructure problems" all the way up to Level 10's "The End of the World as We Know It."[1510] The organization's membership, made up largely of those who—at least ostensibly—were in a position to make informed predictions had been divided in their expectations, and though there had been relatively few people making predictions at either extreme, much of the membership was expecting a Level 5 scenario, though the next largest cluster of predictions fell around Level 3.[1511] Commenting on the survey results, Bruce Webster who was co-founder and co-chair of the WDCY2K commented on Level 1 ("A bump in the road") that "It's still hard to believe we could get off this lightly," and framed Level 2 ("Well, maybe a large pothole") as being "probably the best result we can hope for."[1512] Identities protected by anonymity, respondents to the WDCY2K surveys provided answers justifying their selections that ranged from a Level 0 justification of "This issue has become the

[1508] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Investigating the Year 2000 Problem: The 100 Day Report.* 106th Cong., 1st sess., September 22, 1999. S. Prt. 106-31. 1.
[1509] Ibid.
[1510] Bruce Webster. *The Y2K Survival Guide: Getting to, Getting Through, and Getting Past the Year 2000 Problem.* (Upper Saddle River: Prentice Hall PTR, 1999). 327-354.
[1511] Ibid, 406.
[1512] Ibid, 332-335.

focus for free-floating anxieties relating to software (and perhaps to the millennium),"[1513] through a Level 3 justification of "Hope I'm wrong!"[1514] through a Level 5 of "I picked my best case scenario; there's a real possibility it could be much worse,"[1515] while one predictor of Level 9 commented "The words, 'not with a bang but with a whimper' come to mind."[1516]

And mixed in with all of the comments from members of the WDCY2K group was one anonymous observation that arguably provided the prediction that was the most accurate. Granted, the commentor in question, having predicted a Level 3 scenario, began with some projections that turned out to be rather off base: imagining that the end of 1999 would be characterized by "the most volatile period of financial turmoil the world has ever seen" with this being mirrored by "the most dynamic market the world has ever seen" in the early weeks of 2000 as those who had pulled their money out all rushed to put their money back in.[1517] Yet, the impressive foresight of this particular commentator—identified only as hailing from the corporate sector—did not relate to their prediction regarding the closing of 1999 and the start of 2000, but in a more farsighted prediction, namely:

> "Although some suffering will occur in selected areas, history will record it as an amusing moment, unfortunately discounting the yeoman efforts of the countless professionals worldwide who toiled under adverse and stressful conditions to save the world as we have come to know it. In 2000, I suspect many of the unknowledgeable will speculate whether there really was a problem anyway."[1518]

With these two sentences, this anonymous survey respondent, captured the essence of Y2K while anticipating the way that Y2K would be remembered by posterity: a race on the part of "countless professionals worldwide" to perform the necessary labor "to save the world as we

[1513] Ibid, 414.
[1514] Ibid, 424.
[1515] Ibid, 437.
[1516] Ibid, 476.
[1517] Ibid, 422.
[1518] Ibid, 422-423.

have come to know it" who rather than be met with cheers and applause would be met with condescension as the crisis they confronted came to be dismissed "as an amusing moment" with many even eventually wondering if "there really was a problem anyway." As these comments were in response to a survey that asked respondents to make a prediction based on eleven possible scenario levels, it seems fair to imagine that this respondent must have been aware of the way that in at least some circles Y2K was being seen in an apocalyptic context—but the comment eschews entanglement with the extremes for a grounded focus on "the yeoman efforts" taking place. In their comments on "financial turmoil" followed by "the most dynamic market" this commentator framed the way that the cataclysmic panic could lead to some problematic actions, but the comment's focus was not on those actions being taken by those outside of the IT world, but on the work of all those "countless professionals" in and around the IT world. And in considering the worldwide effort that went into addressing Y2K, the commentator also grasped another essential element of Y2K, the way in which the crisis would bring about not the end of the world, but the way in which it revealed that by the end of the twentieth century people were living in a new sort of world—one dependent upon the continued functioning of complex computer systems—and thus to fix Y2K was "to save the world as we have come to know it."

This anonymous commentator was hardly alone in wondering how Y2K would be perceived after the year 2000 actually began. Though, what set this commentator apart was not so much the specifics of their commentary as it was the unusual foresight that allowed them to make this prediction at a point when many of the other people working on Y2K were still fixated on the immediate future of getting everything fixed by the deadline. The focus on the unsung "yeoman efforts" was one of the themes that emerged in many of the Y2K post-mortems, that celebrated the lack of computer-wrought calamity but which sought to emphasize that it was not

the result of a lucky break, but the result of lots of people working to make sure that things did not break. This was the stance that Peter de Jager expounded in *The Washington Post* writing that "We avoided chaos because programmers and managers around the world did their best to solve this potential problem before it became a reality."[1519] Before 1999 became 2000, de Jager had pivoted from warning of "Doomsday 2000" to a position of "Doomsday Avoided," but central to this shift was the work of all of those who had seized the steering wheel in order to avoid "Doomsday." The *Computerworld* columnist Frank Hayes, writing primarily for an IT readership, expressed the frustration of those who had been the ones putting in "the yeoman efforts," who noted that IT professionals would likely "feel cheated. Cheated out of the credit you deserve, cheated out of the respect you've earned."[1520] Writing of the labor performed by the IT sector, Hayes was not particularly subtle, "We *created* this outcome...It took a huge amount of work. And what we've created is a nonevent."[1521] Writing in *Information Week*, Leon Kappelman stated "the IT profession deserves a combination of the Nobel Peace Prize, knighthood, and the Medal of Honor for the way it handled the year 2000 problem," adding "We kicked the Y2K bug's butt, and we did it efficiently and effectively."[1522] Much like Hayes, Kappelman looked at the nonevent, and noted "We did it so well, in fact, we made it look easy to those who weren't paying attention anyway," and in responding to those who "don't believe that Y2K was about real problems" Kappelman accused them of not believing "polio was real now that vaccination has all but eradicated that bug."[1523] And if all the effort that was expended throughout the 1990s was going unsung, so too were the efforts to fix the various problems that

[1519] Peter de Jager. "Y2K: No Sham—A Success Story." *The Washington Post.* January 3, 2000: A19.
[1520] Frank Hayes. "Feeling Cheated?" *Computerworld* 34, Iss. 2 (January 10, 2000): 82.
[1521] Ibid.
[1522] Leon Kappelman. "Millennium Crunch: Three Cheers for the Victors!" *InformationWeek.* Iss. 772 (February 7, 2000): 185. 185.
[1523] Ibid.

were actually happening. For example, *Computer* quoted the "veteran software developer" David Thielen as noting that the nonevent framing was "not the whole story" for "there were a lot of Y2K bugs, and a lot of effort will be expended fixing them over the next few months."[1524] And Thielen's sentiment was echoed elsewhere, with *Computerworld* citing a source at an information technology research organization as observing "With everyone carrying the impression that things went so well, no company will want to look like it was the only one that fell down."[1525]

This focus on the things that did in fact go wrong was a theme that was echoed in many of the government's post-mortems, which sought to secure some of the credit not only for those who worked in the IT sector but also for those in the government who had worked on the problem. John Koskinen, who had chaired President Clinton's Council on Year 2000 Conversion, commented "If we still have minor problems after all that effort…imagine what the risks would be if we hadn't done the work."[1526] And testifying at the House of Representatives final Y2K hearing, Koskinen emphasized that things working out as well as they did not really come as a huge surprise to him or many of the others who had been focused on the problem and genuinely understood the work that had gone into redressing the problem.[1527] Koskinen acknowledged "that the Y2K transition went more smoothly than any of us would have imagined" and noted that some were taking from this the stance "that Y2K was an insignificant

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[1524] Anne Lear. "Y2K Rollover: Few Problems, Many Questions." *IEEE Computer* 33, No. 2 (February 2000): 22.
[1525] Computerworld Staff. "What Did Go Wrong: A Global Roundup of Y2K Glitches." *Computerworld.* Vol. 34, Iss. 2 (January 10, 2000): 19.
[1526] Anne Lear. "Y2K Rollover: Few Problems, Many Questions." 22.
[1527] U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and the Subcommittee on Technology of the Committee on Science. *Year 2000 Computer Problem: Did the World Overreact, and What Did We Learn?* 106th Cong., 2nd sess., January 27, 2000. 13-23.

problem," that had been drummed up by prophets of doom, doomsday profiteers, and an irresponsible media, but Koskinen stated firmly "I don't know of a single person working on Y2K who thinks that they did not confront and avoid a major risk of systemic failure…Y2K was a very real threat indeed."[1528] And with this invocation of people actually "working on Y2K" Koskinen drew a contrast between the views of those who really understood what had happened with Y2K, and the many people who were perhaps feeling slightly embarrassed by all of the extra toilet paper they had bought after reading one breathless article. And Koskinen was certainly not the only voice taking this position at that final House Hearing. Indeed, throughout the leadup to 2000, Koskinen had frequently sparred with Representative Horn—with Koskinen providing a sunnier appraisal in contrast to the generally glum assessments that Horn's Y2K report cards represented. Though there were moments where Horn had doled out failing grades, his final cumulative grade for the federal government's level of readiness had been a B+, and at this last hearing, Horn stated "We prodded, we questioned, and we hoped for the best, and the best happened…Was the money well spent? Of course it was."[1529] Like Koskinen, Horn also pointed to the problems that had occurred as "giving cause to wonder what might have happened if the work had not been completed," and Horn inserted into the hearing record "a statement stressing that without the work of many in the executive and legislative branches, it would not have been as successful."[1530] Other Representatives at that hearing took a similar stance. Alongside Horn, Representative Constance Morella had been one of the most prominent House members holding hearings on Y2K, and she stated plainly, "In my mind, there is no doubt the problem was real," and she gave a reminder that in the lead up to 2000 "we witnessed systems

[1528] Ibid, 14-15.
[1529] Ibid, 2.
[1530] Ibid.

failing Y2K tests and crashing completely."[1531] And to the extent that premonitions of complete infrastructure collapse had become bound up with Y2K in popular culture, Morella sought not to dodge the mention of disaster but to state "I think the fact that nothing of disastrous proportions happened does not mean that nothing would have happened."[1532]

Over the course of the 105th and 106th Congresses, the Senate Special Committee on the Year 2000 Technology Problem, had held thirty-five hearings and issued two lengthy cumulative reports, and its activities came to a close with the final report, titled "Y2K Aftermath – Crisis Averted," that was fittingly issued on the leap day of February 29, 2000.[1533] Like Koskinen and the various Representatives at the final House hearing, the final committee report defended the work that had been done by the Special Committee and the remediation efforts more broadly. Recognizing that billions had been spent on the problem, the Special Committee maintained the position that "It is the Committee's judgement that the level of effort was justified and the expenditure of funds was indeed necessary."[1534] And to the extent that many were questioning if all of this really had been truly "justified," the final report stated plainly that "Testimony and available research" had made it clear "that the Y2K threat was very real, and that the risks and consequences of inaction were too dire to justify a lesser effort."[1535] Better to have to weather the snide comments of those not in the know suggesting that too much had been done, than to have to address the despairing wails of "why didn't you do more?" should a calamity have actually occurred. The Special Committee did provide some introspection as to why it had been hard to truly predict the "better-than-expected" results (home and abroad) and emphasized that it was

[1531] Ibid, 6.
[1532] Ibid.
[1533] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Y2K Aftermath—Crisis Averted, Final Committee Report.* 106th Cong., 2nd sess., February 29, 2000. S. Prt. 106-42.
[1534] Ibid, 3.
[1535] Ibid.

frequently difficult to obtain "accurate and current information," that a fair amount of work really had been done in 1999's closing months, that "multinational corporations" had been able to exert pressure on their international partners, and that "contingency plans" had been successful.[1536] Furthermore, alongside its lengthy sigh of relief, the final report included a thirteen page appendix of Y2K related glitches that had occurred.[1537] While the list itself provides a counter to the idea that nothing went wrong, what is most significant is the Special Committee's commentary introducing the appendix that notes "The full extent of Y2K problems will probably never be known because only a small fraction of the actual occurrences will be reported."[1538] And in simply noting "There is no incentive for corporations or countries of the world to openly report computer problems," the Special Committee's final report echoed the stance of many within the IT sector that more went wrong than was widely known.[1539]

If many in the IT and government sectors were committed to justifying the work that had been done, many media outlets were quite content to take a less kind stance. Where once Howard Rubin had lamented in the pages of *Computer* that news organizations looking for comments on Y2K "don't really want to speak to me, they want the crazies," those new organizations were now happy to poke some fun at those who had predicted the end of the world.[1540] While many news organizations quoted from the various government sources and technical experts they had been drawing on throughout the lead up to 2000 in order to get across the view that Y2K was a problem that had been fixed, much of the regular news coverage was not quite as self-congratulatory as the tech press's own coverage. Noting that Y2K problems could keep popping

[1536] Ibid, 4.
[1537] Ibid, 37-49.
[1538] Ibid, 37.
[1539] Ibid.
[1540] Howard Rubin. "Diary of a Y2K Consultant: Bracing for the Millennium." *Computer* 32, No. 1 (January 1999): 51-56. 55.

up over the course of the first several weeks of 2000, *Newsweek* which had once published a cover story wondering about "the day the world crashes" was instead now saying "So it wasn't' the end of the world…So far, even those who weren't fearing the worst seemed disappointed that the bug had no bite."[1541] In an editorial on January 3, 2000, *The New York Times* treated the nonevent as "a welcome anticlimax" while emphasizing that given the reality of the crisis "inaction was not an option for government and business leaders once the experts determined the existence of a threat."[1542] Elsewhere in its coverage, *The Times* cited many of these experts, Leon Kappelman was quoted as saying "There was puffery by vendors and some money was wasted, but these were real problems," and similarly Howard Rubin noted "Probably 10 percent of the world's computer systems had a workout at the gym this weekend, but 90 percent did not," and Michael Grannatt, a director of the millennium center of the British government noted "Things don't go right by accident…They go right through proper planning."[1543] Meanwhile, *The Times* was also taking a somewhat less flattering approach to other Y2K experts, such as Edward Yourdon who was described as "one of the nation's leading Y2K Cassandras," who is quoted as saying (with some clear self-deprecating humor) in reference to his book *Time Bomb 2000*: "I guess the book's sales prospects are about zero now."[1544] While noting that Yourdon "had few regrets" and quoting him couching his earlier concerns in a comment about the difficulty of

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[1541] Jared Sandberg and David Kaplan. "Why Y2K Won't Die—Glitch Watch: The Millennium." *Newsweek.* January 10, 2000: 38.
[1542] Editorial Board. "The Wisdom of Y2K Planning." *The New York Times.* January 3, 2000: A18.
[1543] Barnaby Feder and Andrew Revkin. "Vast Effort to Fix Computers Defended (and It's Not Over)." *The New York Times.* January 1, 2000. A1, A13. A13.
[1544] James Brooke. "A Cassandra With No Regrets, and Besides, It Is Not Over Yet." *The New York Times.* January 3, 2000. A16.

getting verifiable data, Yourdon still closes out by observing "I may have to eat my words, publicly and with great embarrassment."[1545]

Writing, at length, on his own website Yourdon had mixed some slight embarrassment with a larger sense of frustration that was evocative of some of the "yeoman efforts," while simultaneously being heavily framed by Yourdon's role not so much as a programmer working unseen on fixing the problem but as a well-respected member of the IT community who had "been one of the more vocal pessimists about Y2K."[1546] Yourdon reproduced many of the unkind (threat and curse filled) message he had received, noting that many people "appeared to be operating with the benefit of 20-20 hindsight" he pointed to some of the disruptions that had occurred while pointing out that these were the sorts of problems many experts had actually predicted, and even though Yourdon noted that it would take more than a week of the year 2000 to declare victory, his comments expressed a clear sense that rather than being given the respect he was due for sounding the alarm, he was being treated as a scapegoat.[1547] Other prominent commentators on Y2K of the more alarmed variety, also found themselves wrestling with how to explain not so much what had happened, but what had not happened. Rebranding his website around the theme of "self-reliant living," Michael Hyatt stood his former ground while also recognizing that what had transpired was the sort of non-event he had once treated as unworthy of serious consideration, as he put it "I don't think that we overstated the problem, but I do

[1545] Ibid.
[1546] Ed Yourdon. "Move Over, Rodney Dangerfield – You've Got Company." *Yourdon.com* (http://www.yourdon.com/: January 6, 2000); archived at *Wayback Machine* (http://web.archive.org/web/20000511102531/http://www.yourdon.com/).
[1547] Ibid.

believe we underestimated the progress being made."[1548] Though Hyatt did not suggest it was any sort of massive conspiracy, he echoed the comments from the tech press and various government officials about the fact that many companies were not particularly eager to broadcast it if they had encountered problems which they had been able to quietly and quickly fix.[1549] Karen Anderson, who *Time Magazine* had once referred to as "the Martha Stewart of Y2K survivalism,"[1550] took to her website to note that she received some "nasty emails" but also many positive ones, and she praised her readers as "the unsung Y2K heroes – you have worked to make your homes and communities better, safer and more secure."[1551] The former leader of the Cassandra Project, Paloma O'Riley sent a letter to fellow Y2K activists, in which she noted "I feel like we dodged a bullet," while also stating that those engaged in Y2K activism had known "that this was a (relatively) thankless effort we undertook," and O'Riley stood her ground noting, "Our actions don't need to be justified. We did what we believed needed to be done."[1552] And in a memorandum, Norman Dean of the Center for Y2K and Society struck a celebratory tone, congratulating "all of us who worked to prevent a Y2K crisis," applauding that "we successfully met the most serious technological challenge of the computer age and apparently did so with flying colors," crediting the Center with the important work it had done to raise awareness, but still closing out with a somber recognition that there were those trying to cast blame but that "We

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[1548] Michael Hyatt. "Ask Michael: Why are so few Y2K gltiches being reported?" *Michaelhyatt.com*. (http://www.michaelhyatt.com/askmichael/101.htm: February 7, 2000); archived at *Wayback Machine* (http://web.archive.org/web/20001023015535/http://www.michaelhyatt.com/askmichael/101.htm).
[1549] Ibid.
[1550] Richard Lacayo. "The End of the World Aw We Know It?" *Time Magazine* 153, Iss. 2 (January 18, 1999): 60-70. 63.
[1551] Karen Anderson. "Dear Karen…Issue #78 January 11, 2000. Topic: Lessons Learned." *Y2kwomen.com*. (http://www.y2kwomen.com/archives/DK78.html: January 11, 2000); archived at *Wayback Machine* (http://web.archive.org/web/20000903052619/http://www.y2kwomen.com/archives/DK78.html).
[1552] Paloma O'Riley. "My Compatriots in the Cause." *Nhne.com*. (http://www.nhne.com/y2kafterthoughts/: January 10, 2000); archived at *Wayback Machine* (http://web.archive.org/web/20010430221002/http://www.nhne.com/y2kafterthoughts/).

need to reward, not punish, those who helped create the climate that prevented a Y2K rollover disaster."[1553]

There was general agreement that the lack of computer caused calamity in the early weeks of the year 2000 was cause for celebration. Certainly, there were some in the IT sector who felt they were not being given the credit that was there due, there were some prominent Y2K commentators who felt that they now had to defend their actions, there were some in the government trying to frame Y2K as proof that the government really could solve complex problems, but perhaps more than anything else there was just pressure to move on. There simply had not been enough serious disruptions to capture headlines for long—and it was only entertaining to mock those who had stockpiled canned goods for a couple of weeks. Besides, there was a race for the Presidency heating up, and with the downer that had been Y2K fading into the rearview mirror the exciting technological news about all things Internet could leap to the fore of technological discourse. And as Y2K began to rapidly fade into the background, even as it began to sink into ignominy, the question of what should be learned from Y2K swirled in the background. After all, in the case of things having gone horribly awry there might have been substantial pressure to make sense of what went wrong to ensure that it could never happen again, but in this situation where things went right there seemed to be less interest in figuring out exactly why it was that things had gone so well and to apply those lessons. At the end of January

[1553] "Memorandum." January 12, 2000. CBI 155, Box 8, folder "Steering Comm. – January 19th." Center for Y2K and Society Collection. Charles Babbage Institute, University of Minnesota.

2000, de Jager had mused on his website that "If you do it right, the problems you warn of today, will be unworthy of comment tomorrow" – but how then can those lessons be applied?[1554]

In seeking to answer the question of what should be learned from Y2K, another question must be answered first, namely: what kind of problem was Y2K? And though it is a bit of an oversimplification, it is clear that Y2K was at base a problem about computers. Yes, it was a problem that had a variety of specifically technical aspects to it, that dealt with issues like the long lifespan of code, the importance of documentation, and the necessity of computer maintenance. However, the story of Y2K is not one that is only about the IT sector creating a problem, eventually recognizing there was a problem, racing to fix the problem, and managing to fix things in the nick of time. For while Y2K is a problem that is at core a technical one, the way in which Y2K became a major event connects not just to computers (as such), but to the ways in which Y2K revealed the extent to which so many people's lives had become reliant on those computer systems whether they had previously realized it or not. Y2K was about the truncating of dates and the disruptions that this could eventually cause, but much more fundamentally Y2K was about the recognition that utilities, telecommunications, banking, keeping the grocery shelves stocked, and basic government services were all reliant on computer systems. And thus, all of those who were reliant on any of those other systems were themselves also reliant on computer systems. It was in response to the recognition of this dependency, and the vulnerability that came from it, that many of the non-IT responses to Y2K were born. When Senator Moynihan wrote to President Clinton in 1996 warning "The computer has been a blessing; if we don't act quickly, however, it could become the curse of the age," his comment was alluding to a

[1554] Peter de Jager. "The Cautions of Cassandra." *Year2000.com*. (http://www.year2000.com/y2kcassandra.html: January 28, 2000); archived at *Wayback Machine* (http://web.archive.org/web/20000302180355fw_/http://www.year2000.com/y2kcassandra.html).

problem having to do specifically with Y2K, but the deeper meaning captures the way that a narrow focus on computing's blessings had left many unprepared for the way those could just as easily become curses.[1555] Commenting on the "paradoxical role of the computer" in 1983, the computer scientist and social critic Joseph Weizenbaum had warned "We have concluded a Faustian pact with our science and technology generally, and with the computer in particular."[1556] And perhaps Y2K is just an example of payment to Mephistopheles coming due.

Amongst those in the IT sector there was a fairly clear understanding that Y2K had some particular lessons for them. And considering how many individuals from this world had been worried about the ways that Y2K was negatively reflecting on them as a profession, one clear lesson was to not let something like this happen again. Writing in *Information Week*, Kappelman—who had evocatively described Y2K as a DRAGON—called Y2K "a historical watershed" noting "Everyone in the business community now knows that IT counts" and "They also know how to communicate more effectively about IT."[1557] Though Kappelman also noted "Y2K was a symptom of the underlying quality and management problems in IT," and thus attention to such "quality and management problems" would be essential for preventing future Y2K-esque problems.[1558] In the pages of *IEEE Software*, Kappelman further expanded on "the huge silver lining for organizations that did it right," as Y2K gave organizations "a solid understanding of the workings and value of their information systems."[1559] With the implicit lesson being that having an actual understanding of those systems matters. Elsewhere in *IEEE*

[1555] U.S. Congress. Senate, *Investigating the Impact of the Year 2000 Problem: The 100 Day Report.* 212.
[1556] Joseph Weizenbaum. "The Paradoxical Role of the Computer." Holst Memorial Lecture 1983. Techische Hogeschool Eindhoven. December 14, 1983. 13.
[1557] Leon Kappelman. "Millennium Crunch: Three Cheers for the Victors!" *InformationWeek.* Iss. 772 (February 7, 2000): 185.
[1558] Ibid.
[1559] Leon Kappelman. "Some Strategic Y2K Blessings." *IEEE Software* 17, Iss. 2 (March/April 2000): 42-46. 42.

Software, Edmund Arranga and Wilson Price had argued "Y2K clearly illustrated the extent to which IT still relies on COBOL," a reliance that had not disappeared with Y2K and which therefore needed to be remembered.[1560] Some within the IT world more fully ruminated on the meaning of Y2K beyond their own profession: Anthony Finkelstein argued the profession needed "to take greater responsibility for educating the public and business management," needed "to recognize and combat hype," needed to "rebuild the confidence of the public and of business," and most fundamentally "develop the science and practice of software engineering so that we can deal with the underlying chronic problems that Y2K signaled."[1561] Martyn Thomas mused on the level of computer dependency already visible in society, and wondered "Perhaps we should take care to ensure we do not become so dependent that a future common-mode failure would be disastrous."[1562] And a similar gesture towards a future that featured even more computers was made by Howard Rubin, who was quoted in *The New York Times* as warning that such a slow start to future risks would not be possible for long as "When computers are in your face – when you have an Internet refrigerator – you won't be able to take that kind of chance."[1563] The lesson of a world threatened by computer dependency related risks was one that Rubin warned would only increase, as he stated: "Soon, Earth will have an Internet skin. This skin will be a critical thing. As everything becomes more responsive in real time, the technological risks get higher."[1564]

[1560] Edmund Arranga and Wilson Price. "Fresh from Y2K, What's Next for Cobol?" *IEEE Software* 17, Iss. 2 (March/April 2000): 16-20.
[1561] Anthony Finkelstein and Martyn Thomas. "Head-to-head: looking back at Y2K." *Computing & Control Engineering Journal* 11, Iss. 4 (August 2000): 156-159. 157.
[1562] Ibid, 159.
[1563] Barnaby Feder and Andrew Revkin. "Vast Effort to Fix Computers Defended (and It's Not Over." *The New York Times.* January 1, 2000. A1, A13.
[1564] Ibid.

The sense that Y2K's lessons were not simply about improving technical documentation and devoting more resources to software maintenance permeated the government post-mortems. Testifying at the House's final Y2K hearing, Koskinen laid out four lessons that needed to be carried forward from Y2K: first "that top management needs to be more involved in information technology" as "IT cuts to the very heart of how organizations conduct their business;" second, more work was needed "keeping track of the technology we use and the functions it performs;" third, as Y2K showed "the increasing interconnectedness of organizations through technology" it demonstrated the importance of partnerships for handling complex issues; and fourth, a need "to include the American public in the discussions about any future large-scale challenges" as Koskinen warned that it was a lack of reliable information from trustworthy sources that had fed into the proclivity to panic.[1565] Koskinen's lessons certainly touched on the importance of basic technical work, but they were more deeply rooted in a recognition that such work was necessary as it was the foundation upon which the rest of society stood. For its part, the Senate Special Committee, credited Y2K with giving rise to "a more thorough understanding of IT-related challenges, including effective quantification of IT problems and their probable impact" alongside "a higher awareness of the integral role IT plays in business functions."[1566] Y2K revealed some fundamental shifts in the world, with these largely being about the power played by computers and increasingly by the Internet, new risks that altered traditional thinking around geopolitics as "There is no geography in the world of software."[1567] Looking towards the future and anticipating the greater role that the Internet would likely be taking on, the Special

[1565] U.S. Congress. House. Joint Hearing before the Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and the Subcommittee on Technology of the Committee on Science. *Year 2000 Computer Problem: Did the World Overreact, and What Did We Learn?* 21-23.
[1566] U.S. Congress. Senate. Special Committee on the Year 2000 Problem. *Y2K Aftermath—Crisis Averted: Final Committee Report*. 17.
[1567] Ibid, 21.

Committee looked to Y2K as a lesson in the "importance of high-tech infrastructure protection."[1568] It was not so much that the computers in Y2K changed the world, but that Y2K showed that computers had already changed the world, and that those in positions of power needed to wise up to this and catch up lest they be caught unawares by the new sorts of problems present in a world where the computer was king.

Clearly, there was much to be learned, but would it be? The Special Committee noted, "Perhaps Y2K has helped organizations develop a keener sense of their dependency on information technology," but "perhaps" was not a definitive statement.[1569] A similar concern that little would actually be learned in the long run was voiced by Representative Morella, when she asked "Will Y2K inspire a conscious effort for greater long-term planning and more reliable and secure technology, or will it just prolong the shortsighted thinking that made Y2K so costly?"[1570] Though heartened that Y2K had not resulted in a calamity, O'Riley wrote that for her, "one concern remains—that business and gov't [sic] will learn nothing form our close call, that we will continue the same shortsighted practices."[1571] Yourdon, writing in *IEEE Software* as opposed to his personal website, seemed to believe that little would be learned, noting "If Y2K turns out to be a mere BITR [bump in the road], then it will be quickly forgotten, and businesses will move on to brave new worlds of e-commerce, distributed computing, and other new technologies."[1572] And though Peter de Jager had expressed the hope "that there will be a better

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[1568] Ibid, 23.
[1569] Ibid, 21.
[1570] U.S. Congress. House. Joint Hearing before the Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and the Subcommittee on Technology of the Committee on Science. *Year 2000 Computer Problem: Did the World Overreact, and What Did We Learn?* 7.
[1571] O'Riley. "My Compatriots in the Cause."
[1572] Edward Yourdon. "IT Departments: Battling the Y2K Backlash." *IEEE Software* 17, Iss. 1 (January/February 2000): 100-101. 100.

appreciation of how much we actually depend upon technology," that hope was juxtaposed with his woebegone comment, "But I don't think we've learned anything from this."[1573]

The privilege of hindsight can make it fairly easy to judge the correctness of various predictions made about what would happen when 99 rolled over to 00, but it is not quite as easy to pass definitive judgement on whether or not the lessons of Y2K have been sufficiently learned or ignored. And yet one thing does seem abundantly clear, in the years since Y2K proved to be a nonevent, societies reliance on complex computer systems has only deepened and spread. Where Y2K led some to worry, "We are headed for the first turn in this information highway, and we forgot to put in a steering wheel,"[1574] in the twenty-first century it seems that we are racing down that highway picking up more and more speed, even as the reference to the "steering wheel" evokes the way that many of us today are growing more and more anxious about where it is that this highway is actually taking us. In the twenty-first century it is still possible to feel that we are racing down the "information highway" without a steering wheel, but it is also possible to feel that we are trapped in the backseat while someone else is driving, and it is just as easy to feel that the vehicle is not only missing a steering wheel but also a braking system.

The philosopher Paul Virilio once provocatively noted, "Unless we are deliberately forgetting *the invention of the shipwreck* in the invention of the ship or the *rail accident* in the advent of the train, we need to examine the hidden face of new technologies before that face reveals itself in spite of us."[1575] And perhaps Y2K represents the sort of wreck that was invented alongside the invention of the computer, one that had been deliberately forgotten for decades,

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[1573] Anonymous. "Have We Learned Nothing From the Y2K Episode." *Computerworld* 34, Iss. 2 (January 10, 2000): 19.
[1574] Arnaud de Borchgrave and Bradley D. Belt (co-chairs). *The Y2K Crisis: A Global Ticking Time Bomb?* Washington, D.C. June 2, 1998. The Center for Strategic and International Studies.
[1575] Paul Virilio. *Open Sky.* (London: Verso Books, 2008). 40.

and which revealed "itself in spite of us" in the 1990s. Meaning that the level of dependency created vulnerability that Y2K revealed is less of an aberration, and more of a fact of life in a world filled with computers: "the world as we have come to know it."

In its initial report on Y2K the Senate Special Committee commented: "Reverting to a world without microchips or technology-dependent systems is not only undesirable, but also impossible. Instead, we, as a nation and as individuals need to consider carefully our reliance on information technology and the consequences of interconnectivity, and work to protect that which we have so long taken for granted."[1576] The hope of this dissertation has been that this is a lesson that Y2K can help teach us.

For it is a lesson we still need to learn.

[1576] U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Investigating the Impact of the Year 2000 Problem.* 106th Cong., 2nd Sess., February 24, 1999. S. Prt. 106-10. 13.

Bibliography

Primary Sources

Archival Collections

Center for Y2K and Society Collection. CBI 155. Charles Babbage Institute, University of Minnesota, Minneapolis MN.

International Y2K Cooperation Center Records. CVI 153. Charles Babbage Institute, University of Minnesota, Minneapolis MN.

Millennium Watch Institute Collection. Print Collection 6. University of Pennsylvania: Kislak Center for Special Collections, Rare Books and Manuscripts. Pennsylvania, PA.

United States Government Reports and Resolutions

U.S. Congress. House of Representatives. Committee on Government Reform and Oversight. *Year 2000: Computer Software Conversion: Summary of Oversight Findings and Recommendations.* September 27, 1996. 104th Cong., 2nd sess., House Report 104-857.

U.S. Congress. House of Representatives. Committee on Government Reform and Oversight. *The Year 2000 Problem.* October 26, 1998. 105th Cong., 2nd Sess., House Report 105-827.

U.S. Congress. Senate. *To Establish a Special Committee of the Senate to Address the Year 2000 Technology Problem.* S. RES. 208. 105th Cong., 2nd Sess., April 2, 1998. (https://www.congress.gov/105/bills/sres208/BILLS-105sres208ats.pdf).

U.S. Congress. Senate. *Congratulating and thanking Chairman Robert F. Bennett and Vice Chairman Christopher J. Dodd for their tremendous leadership, poise, and dedication in leading the special committee to the year 2000 technology problem and commending the members of the Committee for their fine work.* S. RES. 264. 106th Cong., 2nd sess., February 29, 2000. (https://www.congress.gov/bill/106th-congress/senate-resolution/264).

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Investigating the Impact of the Year 2000 Problem.* 106th Cong., 2nd Sess., Feburary 24, 1999. S. Prt. 106-10.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Investigating the Year 2000 Problem: The 100 Day Report.* 106th Cong., 1st sess., September 22, 1999. S. Prt. 106-31.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Y2K Aftermath—Crisis Averted, Final Committee Report.* 106th Cong., 2nd sess., February 29, 2000. S. Prt. 106-42.

U.S. Library of Congress. Congressional Research Service. *The Year 2000 Computer Challenge*, by Richard M. Nunno. 96-533 SPR (1996), CRS-1.

United States Government Congressional Hearings

U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and Oversight. *Is January 1, 2000, the Date for Computer Disaster?* 104th Cong., 2nd sess., April 16, 1996.

U.S. Congress. House of Representatives. Subcommittee on Technology of the Committee on Science. *Solving the Year 2000 Software Problem: Creating Blueprints for Success.* 104th Cong., 2nd sess., May 14, 1996.

U.S. Congress. House of Representatives. Subcommittee on Technology of the Committee on Science and the Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and Oversight. *Solving the Year 2000 Computer Problem.* 104th Cong., 2nd sess., September 10, 1996.

U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and Oversight. *Will Federal Computers Be Ready for the Year 2000?* 105th Cong., 1st sess., February 24, 1997.

U.S. Congress. House of Representatives. Subcommittee on Technology of the Committee on Science Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform. *Year 2000 Risks: What Are the Consequences of Information Technology Failure?* 105th Cong., 1st sess., March 20, 1997.

U.S. Congress. House of Representatives. Subcommittee Oversight and Investigations of the Committee on Veterans' Affairs. *Hearing 1. VA's Compliance With Year 2000 Requirements.* 105th Cong., 1st sess., June 26, 1997.

U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and the Subcommittee on Technology of the Committee on Science. *Will Federal Government Computers Be Ready for the Year 2000?* 105th Cong., 1st sess., July 10, 1997.

U.S. Congress. House of Representatives. Subcommittee Oversight and Investigations of the

Committee on Veterans' Affairs. *Hearing 2 on Year 2000 Computer Compliance in the Department of Veterans Affairs.* 105th Cong., 1st Sess., September 25, 1997.

U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform. *Russia's Year 2000 Problem.* 105th Cong., 1st sess., October 27, 1997.

U.S. Congress. House of Representatives. Subcommittee on Technology of the Committee on Science. *The Global Dimensions of the Millennium Bug.* 105th Cong., 1st sess., November 4, 1997.

U.S. Congress. House of Representatives. Committee on Banking and Financial Services. *Millennium Bug: Banking and the Year 2000 Computer Problem.* 105th Cong., 1st sess., November 4, 1997.

U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and the Subcommittee on Technology of the Committee on Science. *FAA at Risk: Year 2000 Impact on the Air Traffic Control System.* 105th Cong., 2nd sess., February 24, 1998.

U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and the Subcommittee on Technology of the Committee on Science. *Oversight of Federal Government's Year 2000 Reports.* 105th Cong., 2nd sess., March 18, 1998.

U.S. Congress. House of Representatives. Subcommittee on Oversight of the Committee on Ways and Means. *Year 2000 Computer Problem.* 105th Cong., 2nd sess., May 7, 1998.

U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform. *Status Update on the Year 2000 Problem.* 105th Cong., 2nd sess., June 10, 1998.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Utilities and the National Power Grid.* 105th Cong., 2nd sess., June 12, 1998.

U.S. Congress. House of Representatives. Subcommittee on Oversight of the Committee on Ways and Means. *Year 2000 Problem and Telecommunications Systems.* 105th Cong., 2nd sess., June 16, 1998.

U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform. *Year 2000: Biggest Problems and Proposed Solutions.* 105th Cong., 2nd sess., June 22, 1998.

U.S. Congress. House of Representatives. Committee on Small Business. *The Year 2000 (Y2K)*

Computer Problem: Are Small Businesses Ready for the Turn of the Century? 105th Cong., 2nd sess., July 15, 1998.

U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and Oversight. *Oversight of the Year 2000 Problem: Lessons to Be Learned from State and Local Experiences.* 105th Cong., 2nd sess., August 13, 17, 19, September 1, 2, and 3, 1998.

U.S. Congress. House of Representatives. Committee on Banking and Financial Services. *Preparing for the Year 2000: Financial Institutions, Customers, Telecommunications, and Power Industries.* 105th Cong., 2nd sess., September 17, 1998.

U.S. Congress. House of Representatives. Subcommittee on Technology of the Committee on Science and the Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and Oversight. 105th Cong., 2nd sess., *Y2K: What Every Consumer Should Know to Prepare for the Year 2000 Problem.* September 24, 1998.

U.S. Congress. House of Representatives. Subcommittee Oversight and Investigations of the Committee on Veterans' Affairs. *Year 2000 (Y2K) Medical Device Issues and Their Impact on the Department of Veterans Affairs.* 105th Cong., 2nd sess., September 24, 1998.

U.S. Congress. House of Representatives. Committee on Transportation and Infrastructure and the Subcommittee on Technology of the Committee on Science and the Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform. *Y2K: Will We Get There On Time?* 105th Cong., 2nd sess., September 29, 1998 and October 2, 6, and 7, 1998.

U.S. Congress. House of Representatives. Subcommittee on the District of Columbia and the Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform. 105th Cong., 2nd sess., October 2, 1998.

U.S. Congress. House of Representatives. Committee on Government Reform and the Committee on Science. *The Year 2000 Problem: Status Report on the Federal, State, Local, and Foreign Governments.* 106th Cong., 1st sess., January 20, 1999.

U.S. Congress. House of Representatives. Subcommittee on the District of Columbia of the Committee on Government Reform. *Status of the District of Columbia's Year 2000 Conversion Compliance.* 106th Cong., 1st sess., February 19, 1999.

U.S. Congress. House of Representatives. Subcommittee on the Postal Service and the Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and the Subcommittee on Technology of the

Committee on Science. *Y2K Technology Challenge: Will the Postal Service Deliver?* 106th Cong., 1st sess., February 23, 1999.

U.S. Congress. House of Representatives. Committee on Ways and Means. *Year 2000 Conversion Efforts and Implications for Beneficiaries and Taxpayers.* 106th Cong., 1st sess., February 24, 1999.

U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform. *Oversight of the Year 2000 Problem: The Y2K Status of the Department of Health and Human Services.* 106th Cong., 1st sess., February 26, 1999.

U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and the Committee on Science. *Oversight of the Year 2000 Problem at the Department of Defense: How Prepared Is Our Nation's Defense?* 106th Cong., 1st sess., March 2, 1999.

U.S. Congress. House of Representatives. Subcommittee on Technology of the Committee on Science and the Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform. *The Impact of Litigation on Fixing Y2K.* 106th Cong., 1st sess., March 9, 1999.

U.S. Congress. House of Representatives. Subcommittee on Technology of the Committee on Science and the Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform. *The Impact of Litigation on Fixing Y2K.* 106th Cong., 1st sess., March 11, 1999.

U.S. Congress. House of Representatives. Committee on Small Business. *The Small Business Year 2000 (Y2K) Readiness Act.* 106th Cong., 1st sess., March 12, 1999.

U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and the Subcommittee on Technology of the Committee on Science. *Will Transportation and the FAA Be Ready For the Year 2000?* 106th Cong., 1st sess., March 15, 1999.

U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform. *Year 2000 Emergency Management.* 106th Cong., 1st sess., March 22, 1999.

U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and the Committee on Science. *Are the Federal Government's Critical Programs Ready for January 1, 2000?* 106th Cong., 1st sess., April 13, 1999.

U.S. Congress. House of Representatives. Committee on Banking and Financial Services.

Finalizing Bank Preparedness for the Year 2000: Testing, Credit Risk, Contingency Planning and Liquidity, and Customer Confidence. 106th Cong., 1st sess., April 13, 1999.

U.S. Congress. House of Representatives. Committee on the Judiciary. *Year 2000 Readiness and Responsibility Act.* 106th Cong., 1st sess., April 13, 1999.

U.S. Congress. House of Representatives. Committee on Banking and Financial Services. *HUD's Preparedness for the Year 2000: Testing, Contingency Planning, and Business Partner Outreach.* 106th Cong., 1st sess., April 14, 1999.

U.S. Congress. House of Representatives. Subcommittee Oversight and Investigations of the Committee on Veterans' Affairs. *Department of Veterans Affairs Year 2000 (Y2K) Readiness.* 106th Cong., 1st sess., April 15, 1999.

U.S. Congress. House of Representatives. Committee on Government Reform. *The Year 2000 Problem, Indianapolis: A Local Response.* 106th Cong., 1st sess., April 19, 1999.

U.S. Congress. House of Representatives. Subcommittee on Health and Environment and the Subcommittee on Oversight and Investigations. *Y2K and the Medicare Providers: Inoculating Against the Y2K Bug.* 106th Cong., 1st sess., April 27, 1999.

U.S. Congress. House of Representatives. Subcommittee on oversight and Investigations of the Committee on Education and the Workforce. *Hearing to Review the Management of the Year 2000 Computer Problem.* 106th Cong., 1st sess., May 12, 1999.

U.S. Congress. House of Representatives. Subcommittee on Technology of the Committee on Science and the Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform. *Y2K In Orbit: The Impact on Satellites and the Global Positioning System.* 106th Cong., 1st sess., May 12, 1999.

U.S. Congress. House of Representatives. Subcommittees on Health and Environment and Oversight and Investigations of the Committee on Commerce. *Y2K and Medical Devices: Screening for the Y2K Bug.* 106th Cong., 1st sess., May 25, 1999.

U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform. *H.R. 1599, The Year 2000 Compliance Assistance Act.* 106th Cong., 1st sess., June 23, 1999.

U.S. Congress. House of Representatives. Subcommittee on International Economic Policy and Trade of the Committee on International Relations. *Y2K, Customs Flows and Global Trade: Are We Prepared to Meet the Challenges of the New Millennium?* 106th Cong., 1st sess., June 29, 1999.

U.S. Congress. House of Representatives. Subcommittee on Government Management,

Information, and Technology of the Committee on Government Reform. *Oversight of the Year 2000 Technology Problem: Lessons to Be Learned from State and Local Experiences.* 106th Cong., 1st sess., July 7, 8 and 9, 1999.

U.S. Congress. House of Representatives. Subcommittee on Social Security of the Committee on Ways and Means. *Year 2000 (Y2K) And Other Social Security Information Technology Issues.* 106th Cong., 1st sess., July 29, 1999.

U.S. Congress. House of Representatives. Subcommittee on Technology of the Committee on Science and the Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform. *Computer Security Impact of Y2K: Expanded Risks or Fraud?* 106th Cong., 1st sess., August 4, 1999.

U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform. *The Year 2000 Computer Problem: Lessons Learned from State and Local Experiences.* 106th Cong., 1st sess., August 13, 14, and 17, 1999.

U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and the Subcommittee on Technology of the Committee on Science. *FAA and Y2K: Will Air-Travel Be Stopped or Significantly Delayed on January 1st and Beyond?* 106th Cong., 1st sess., September 9, 1999.

U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and the Subcommittee on Technology of the Committee on Science. *The Year 2000 Computer Problem Implications for International Travel.* 106th Cong., 1st sess., September 15, 1999.

U.S. Congress. House of Representatives. Subcommittee on the District of Columbia of the Committee on Government Reform. *The Status of the District of Columbia's Year 2000 Conversion Compliance and Technology Improvement Plan.* 106th Cong., 1st sess., September 24, 1999.

U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform. *Year 2000 and Medicare: Is Health Service Delivery at Risk?* 106th Cong., 1st sess., September 27, 1999.

U.S. Congress. Hose of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and the Subcommittee on Technology of the Committee on Science. *State of the States: Will Y2K Disrupt Essential Services?* 106th Cong., 1st sess., October 6, 1999.

U.S. Congress. House of Representatives. Subcommittee on Health and Environment and the Subcommittee on Oversight and Investigations of the Committee on Commerce. *Y2K and Medical Devices: Testing for the Y2K Bug.* 106th Cong., 1st sess., October 21, 1999.

U.S. Congress. House of Representatives. Committee on International Relations. *Y2K: A Threat to U.S. Interests Abroad?* 106th Cong., 1st sess., October 21, 1999.

U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and the Subcommittee on Technology of the Committee on Science. *Y2K and Nuclear Power: Will the Reactors React Responsibly?* 106th Cong., 1st sess., October 22, 1999.

U.S. Congress. House of Representatives. Subcommittee Oversight and Investigations of the Committee on Veterans' Affairs. *Hearing V on Year 2000 Readiness in the Department of Veterans Affairs.* 106th Cong., 1st sess., October 28, 1999.

U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and the Subcommittee on Technology of the Committee on Science. *Y2K and Contingency and Day 1 Plans: If Computers Fail, What Will You Do?* 106th Cong., 1st sess., October 29, 1999.

U.S. Congress. House of Representatives. Subcommittee on Technology of the Committee on Science and the Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform. *Y2K Myths and Realities.* 106th Cong., 1st sess., November 4, 1999.

U.S. Congress. House of Representatives. Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform and the Subcommittee on Technology of the Committee on Science. *Year 2000 Computer Problem: Did the World Overreact, and What Did We Learn?* 106th Cong., 2nd sess., January 27, 2000.

U.S. Congress. Senate. Subcommittee on Financial Services and Technology of the Committee on Banking, Housing, and Urban Affairs. *U.S. Financial Institutions and Federal Regulatory Agencies Management of the Year 2000 Computer Problem.* 105th Cong., 1st sess., July 10 and 30, 1997.

U.S. Congress. Senate. Subcommittee on Financial Services and Technology of the Committee on Banking, Housing, and Urban Affairs. *Year 2000 Liability and Disclosure.* 105th Cong., 1st sess., October 22, 1997.

U.S. Congress. Senate. Subcommittee on Financial Services and Technology of the Committee on Banking, Housing, and Urban Affairs. *Mandating the Year 2000 Disclosure of Publicly Traded Companies.* 105th Cong., 1st sess., November 4, 1997.

U.S. Congress. Senate. Committee on Governmental Affairs. *Crashing Into the Millennium: Federal Agency Year 2000 Conversion Efforts.* 105th Cong., 2nd sess., April 1, 1998.

U.S. Congress. Senate. Committee on Agriculture, Nutrition, and Forestry. *Year 2000 Compliance.* 105th Cong., 2nd sess., May 14, 1998.

U.S. Congress. Senate. Committee on Small Business. *E-Commerce and Y2K: What's Ahead for Small Business?* 105th Cong., 2nd sess., June 2, 1998.

U.S. Congress. Senate. Subcommittee on Financial Services and Technology of the Committee on Banking, Housing, and Urban Affairs. *Disclosing Year 2000 Readiness.* 105th Con., 2nd sess., June 10, 1998.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Utilities and the National Power Grid.* 105th Cong., 2nd sess., June 12, 1998.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Northwest Year 2000 Summit.* 105th Cong., 2nd sess., July 1, 1998.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *International Banking & Finance: An American Perspective.* 105th Cong., 2nd sess., July 6, 1998.

U.S. Congress. Senate. Committee on Agriculture, Nutrition, and Forestry. *Year 2000 Computer Problem.* 105th Cong., 2nd sess., July 22, 1998.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *The Year 2000 Computer Problem: Will the Health Care Industry Be Ready?* 105th., 2nd sess., July 23, 1998.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Telecommunications and Y2K: Communicating the Challenge of the Year 2000.* 105th Cong., 2nd sess., July 31, 1998.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Transportation After Y2K: Can We Get There From Here?* 105th Cong., 2nd sess., September 10, 1998.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *The Year 2000 Technology Problem: Pensions and Mutual Funds.* 105th Cong., 2nd sess., September 17, 1998.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Emergency Planning for the Year 2000: Preparation or Panic?* 105th Cong., 2nd sess., October 2,

1998.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Small Businesses to Global Corporations: Will They Survive the Year 2000?* 105th Cong., 2nd sess., October 7, 1998.

U.S. Congress. Senate. Special Committee on The Year 2000 Technology Problem. *Y2K + H2O: Safeguarding Our Most Vital Resource.* 105th Cong., 2nd sess., December 18, 1998.

U.S. Congress. Senate. Committee on Appropriations. *Year 2000 Computer Problem.* 106th Cong., 1st sess., January 15, 1999

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *The Food Supply: Will The Cupboards Be Bare?* 106th Cong., 1st sess., February 5, 1999.

U.S. Congress. Senate. Committee on Commerce, Science, and Transportation. *S. 96, The Y2K Act.* 106th Cong., 1st sess., February 9, 1999.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *The Millennium Bug: Is Oregon Prepared?* 106th Cong., 1st sess., February 19, 1999.

U.S. Congress. Senate. Subcommittee on Clean Air, Wetlands, Private Property and Nuclear Safety of the Committee on Environment and Public Works. *Nuclear and Chemical Safety: Y2K Issues.* 106th Cong., 1st sess., February 24, 1999.

U.S. Congress. Senate. Subcommittee on Readiness and Management Support of the Committee on Armed Services. *Review of the National Security Ramifications of the Year 2000 Computer Problem.* 106th Cong., 1st sess., February 24, 1999.

U.S. Congress. Senate. Committee on the Judiciary. *The Y2K Bill: The Next Generation.* 106th Cong., 1st sess., March 1, 1999.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *The Food Industry and Y2K: Starving for Attention?* 106th Cong., 1st sess., March 2, 1999.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *International Year 2000 Issues: Will the World Be Ready?* 106th Cong., 1st sess., March 5, 1999.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Y2K in the Courts: Will Be Capsized By a Wave of Litigation?* 106th Cong., 1st sess., March 11, 1999.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Y2K in Nevada.* 106th Cong., 1st sess., March 30, 1999.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Federal Government Year 2000 Preparedness: What's Next for Those Who Missed the March Deadline?* 106th Cong., 1st sess., April 14, 1999.

U.S. Congress. Senate. Committee on Veterans' Affairs. *VA's Contingency Plan for the Year 2000.* 106th Cong., 1st sess., April 20, 1999.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Year 2000 and Oil Imports: Can Y2K Bring Back the Gas Lines?* 106th Cong., 1st sess., April 22, 1999.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Answering the Call for Help: The Impact of Y2K on 911 and Law Enforcement?* 106th Cong., 1st sess., April 29, 1999.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Will Y2K and Chemicals Be a Volatile Mix?* 106th Cong., 1st sess., May 10, 1999,

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Community Preparedness: Is There News They Can Use?* 106th Cong., 1st sess., May 25, 1999.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Y2K and Healthcare: It's Time for Triage.* 106th Cong., 1st sess., June, 10, 1999.

U.S. Congress. Senate. Committee on Appropriations and Special Committee on the Year 2000 Technology Problem. *Joint Hearing on Federal Agency Y2K Spending.* 106th Cong., 1st sess., June 22, 1999

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *State and Local Government Year 2000 Preparedness.* 106th Cong., 1st sess., July 15, 1999.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Year 2000 Global Corporations: Will the Bug Bite Big Business?* 106th Cong., 1st sess., July 22, 1999.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Y2K Response, Recovery, and Cyber-Reconstitution: Understanding the Role of the Information Coordination Center.* 106th Cong., 1st sess., July 29, 1999.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Y2K Update on Gas and Electric Utilities.* 106th Cong., 1st sess., September 21, 1999.

U.S. Congress. Senate. Committee on Energy and Natural Resources. *Y2K: Will the Lights Go Out?* 106th Cong., 1st sess., September 23, 1999.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Y2K & Russia: What Are the Potential Impacts and Future Consequences?* 106th Cong., 1st sess., September 28, 1999.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Will Y2K Snarl Global Transportation?* 106th Cong., 1st sess., September 30, 1999.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Virtual Hearing on Emergency Preparedness.* 106th Cong., 1st., October 7, 1999.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *International Preparedness: What in the World Will Happen?* 106th Cong., 1st sess., October 13, 1999.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *McDonald's: Is the Largest 'Small Business' Y2K Ready?* 106th Cong., 1st., October 22, 1999.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Y2K's Impact on the Economy.* 106th Cong., 1st sess., October 25, 1999.

U.S. Congress. Senate. Special Committee on the Year 2000 Technology Problem. *Y2K: Will Our Seniors Suffer?* 106th Cong., 1st sess., December 8, 1999.

Published Sources

Abrams, Jim. "Key Agencies Found Lagging on Y2K." *The Washington Post.* February 23, 1999.

_____. "Lawmaker Gives Good Grades on Y2K." *Associated Press Online.* November 22, 1999.

Allen, Mike. "In Travels, Dodd Spreads Word About Computer Flaw." *The New York Times*. March 14, 1999.

Anderson, Jason. "This bug's life [A look back at some of the highlights of Peter de Jager's Y2K life]." *Saturday Night.* 114(10) (December 1999/January 2000): 20.

Anderson, J. Burton. *Whitewash Y2K: The Millennium Bug Bible.* Amado: Lion's Pride Publishing, 1999.

Anderson, Karen S. *Y2K for Women: How to Protect Your Home and Family in the Coming Crisis.* Nashville: Thomas Nelson Publishers, 1999.

Andrews, Edmund L. "Europe Rides Bumpy Computer Road to Year 2000." *The New York Times*. July 23, 1999.

Anonymous. “Preventing time from marching backward.” *Nation’s Business.* 85(1) (Jan. 1997): 44.

_____. “The Approaching Bug.” *The Washington Post.* June 14, 1998.

_____. “Making reservations: 01/01/2000: Where Will You Be?” *Computerworld.* 32(3) (January 19, 1998): 93.

_____. “Wall Street Passes Year 2000 Test.” *The New York Times*. April 30, 1999.

_____. “U.S. Ports to Stay Open on Jan. 1, 2000.” *The New York Times*. June 16, 1999.

_____. “President Signs Bill on Y2K Lawsuits.” *The New York Times*. July 21, 1999. https://archive.nytimes.com/www.nytimes.com/library/tech/99/07/biztech/articles/21y2k.html

_____. “Braced for the Millennium.” *The Washington Post.* November 27, 1999.

_____. “Things That Normally Go Wrong.” *The New York Times*. December 14, 1999. https://archive.nytimes.com/www.nytimes.com/library/tech/99/12/biztech/articles/14year-side.html

_____. “Have We Learned Nothing From the Y2K Episode.” *Computerworld.* 34(2) (January 10, 2000): 19.

_____. “Year2000.com Name Gets $10 Million Bid In Auction by eBay.” *Wall Street Journal.* January 4, 2000.

Anthes, Gary. “When Disaster Strikes.” *Computerworld.* 32(3) (January 19, 1998): 80-81, 83.

Appleton, Elaine L. “Call in the cavalry before 2000.” *Datamation*. 42(1) (January 1, 1996): 42.

_____. “Who will pay for year 2000 fixes?” *Datamation*. 43(1) (January 1997): 63.

Arneson, DJ. *The Y2K Joke Book.* Chicago: Kidsbooks Inc., 1999.

Arranga, Edmund C. and Price, Wilson. “Fresh from Y2K, What’s Next for Cobol?” *IEEE Software.* 17(2) (March/April 2000): 16-20.

The Associated Press. “500 Days to Fix Millennium Bug.” *The New York Times.* August 19, 1998. https://archive.nytimes.com/www.nytimes.com/library/tech/98/08/biztech/articles/19millennium.html

_____. "Computer-Bug Alchemists Spin Gloom Into Gold." *The New York Times.* August 19, 1998. https://archive.nytimes.com/www.nytimes.com/library/tech/98/08/biztech/articles/19millennium-money.html

_____. "Hoarding Water and Ammunition Because of a Computer Glitch?" *The New York Times.* August 19, 1998. https://archive.nytimes.com/www.nytimes.com/library/tech/98/08/biztech/articles/19millennium-hoard.html

_____. "Clinton Signs Y2K Legislation." *The New York Times*. October 20, 1998. https://archive.nytimes.com/www.nytimes.com/library/tech/98/10/biztech/articles/20millennium.html

_____. "Countries Making Progress on Y2K Problem." *The New York Times*. March 6, 1999. https://archive.nytimes.com/www.nytimes.com/library/tech/99/03/biztech/articles/06world-y2k.html

_____. "Senate Panel Approves Y2K Lawsuit Bill." *The New York Times*. March 26, 1999. https://archive.nytimes.com/www.nytimes.com/library/tech/99/03/biztech/articles/26y2k.html

_____. "FAA Official Books Dec. 31 Flight." *The New York Times*. May 9, 1999. https://archive.nytimes.com/www.nytimes.com/library/tech/99/05/biztech/articles/08fcc-millennium.html

_____. "Most Plan Cash Withdrawals for Y2k." *The New York Times*. May 22, 1999. https://archive.nytimes.com/www.nytimes.com/library/tech/99/05/biztech/articles/22y2k.html

_____. "Congress Passes Bill on Year 2000 Suits." *The New York Times*. July 1, 1999. https://archive.nytimes.com/www.nytimes.com/library/tech/99/07/biztech/articles/02y2k.html

_____. "Government Launches Y2K Travel Site." *The New York Times*. September 29, 1999. https://archive.nytimes.com/www.nytimes.com/library/tech/99/10/biztech/articles/01year-travel.html

_____. "Y2K Behind Credit Card Machine Failures." *The New York Times*. December 30, 1999. https://archive.nytimes.com/www.nytimes.com/library/tech/99/12/biztech/articles/30credit.html

_____. "Military Satellite Station Had Year 2000 Trouble." *The New York Times*. January 5, 2000. https://archive.nytimes.com/www.nytimes.com/library/tech/00/01/biztech/articles/05year.html

Baldwin, Deborah. "How Big a Bash?" *Time Magazine.* 154(2) (July 12, 1999): 78.

Barovick, Harry; Levy, Daniel; Lofaro, Lina; Orecklin, Michele; Spitz, David; Tartakovsky, Flora; and Taylor, Chris. "Y2K: Still Waiting." *Time Magazine.* 153 (10) (March 15, 1999): 26.

Barr, Stephen. "Mixed Gains Against a Glitch." *The Washington Post.* November 24, 1998.

_____. "House is Warned on Y2K Repairs." *The Washington Post.* January 28, 1999.

_____. "Y2K Critic Gives U.S. a B-Plus." *The Washington Post.* November 23, 1999.

Bates, Dorothy R. and Bates, Albert K. *The Y2K Survival Guide and Cookbook*. Summertown: Ecovillage, 1999.

Baum, David. "Tool up for 2000." *Datamation.* 42(1) (January 1, 1996): 49.

Bauer, Claude J. "Euro Conversion Follows on the Heels of Y2K." *The Washington Post.* February 8, 1998.

Becker, Elizabeth. "U.S. and Russia Agree on Joint Defense Against Y2K Debacles." *The New York Times*. October 28, 1999.

Becker, Pat. "Come Jan. 1, 2000, What Will Your Computer Do?" *Los Angeles Times.* April 1, 1996.

Begley, Sharon. "How We Rang in 2000." *Newsweek*. 134(2) (January 10, 2000): 26-30.

Bemer, R.W. "What's the Date?" *Honeywell Computer Journal.* 5(4) (1971): 205-208.

_____. "Time and the Computer." *Interface Age Magazine.* 4(2) (February 1979): 74-79.

Berg, Stacie Zoe. "Year 2000 Problem Worries Lenders." June 20, 1998.

Bickel, Bruce, and Jantz, Stan. *Y2K: Don't Sweat It!* Tulsa: Honor Books, 1999.

Bishop, Robert B. Jr. "Y2K—The Positive View: The Year 2000 Problem." *IEMC '98 Proceedings. International Conference on Engineering and Technology Management. Pioneering New Technologies: Management Issues and Challenges in the Third Millennium.* 491-495.

Blanchard, John. *Why Y2K? What the Millennium is really all about.* Auburn: Evangelical Press, 1999.

Bohner, S.A.; Backman, T.; Chikofsky, E.; de Jager, P.; Zvegintzov, N. "Examining Year 2000 Date Challenges from the Maintenance Perspective." *1996 Proceedings of International Conference on Software Maintenance.* November 4-8, 1996. 125-128.

Bond, James P. "The Year 2000 Bug Is a Menace, No Doubt About It." *The New York Times*. January 27, 1999. https://www.nytimes.com/1999/01/27/opinion/IHT-the-year-2000-bug-is-a-menace-no-doubt-about-it.html?searchResultPosition=1

Borowitz, Andy. "Why Wait for the Y2K Problem?" *The New York Times.* December 15, 1998.

Bourne, K.C. *Year 2000 Solutions for Dummies.* Foster City: IDG Books Worldwide, 1997.

Braithwaite, Timothy. *Evaluating the Year 2000 Project: A Management Guide for Determining Reasonable Care*. New York: John Wiley and Sons, Inc., 1998.

_____. Y2K Lessons Learned: A Guide to Better Information Technology Management. New York: John Wiley and Sons, Inc., 2000.

Brocklehurst, Ann. "Profits of Doom: Beating the Glitch of the Millennium." *The New York Times.* December 27, 1997. https://www.nytimes.com/1997/12/27/your-money/IHT-profits-of-doombeating-the-glitch-of-the-millennium.html?searchResultPosition=1

Broder, James M. with Zuckerman, Laurence. "Computers are the Future But Remain Unready for It." *The New York Times.* April 7, 1997.

Broder, John M. "Clinton Sees Computer Bug as Major Test in Year 2000." *The New York Times.* July 15, 1998.

Brock, Fred. "Off the Rack; Can You Crush the Millennium Bug?" *The New York Times.* January 18, 1998.

Brooke, James. "A Cassandra With No Regrets, and Besides, It Is Not Over Yet." *The New York Times*. January 3, 2000.

Brown, Corie. "Searching for a Plot, Hollywood Looks to the Millennium." *Newsweek*. 131 (26) (June 29, 1998): 14.

Brownlee, Michael, Stahura, Barbara, Yehling, Robert (eds.). *Just In Case: Dispatches from the Front Lines of the Y2K Crisis.* Novato: Origin Press, 1999.

Buckley, Christopher. "Ask Doctor Y2K." *Time Magazine.* 154(22) (November 29, 1999): 124.

Burt, Andrew. *Noontide Night: a Y2K Novel.* Neverworlds Press, 1999.

Byrd, Mark M. and Bishop, Robert B. Jr. "Y2K Gloom & Doom, The Year 2000 Problem: The Year the Earth Stands Still." *IEMC '98 Proceedings. International Conference on Engineering and Technology Management. Pioneering New Technologies: Management Issues and Challenges in the Third Millennium.* 496-501.

Cameron, Roderick. *Preparing for Y2K & Beyond: A Comprehensive Resource Guide.* Camp Verde: CAMSTAR, 1999.

Celko, Joe. "Start fixing Year 2000 problems now!" *Datamation*. 42(1) (January 1, 1996): 36.

Ceruzzi, Paul. "Y2K: Old Hat in New Technology." *The Washington Post.* January 11, 1999.

Chandrasekaran, Rajiv. "The Bug Didn't Bite: Computers Pass Their Date With Destiny." *The Washington Post.* January 1, 2000.

Chaney, Warren H. *Y2K A World in Crisis? A National Television Broadcast Special.* New York: Swan Publishing Company, 1999.

Chinni, Dante. "The Sky Is Falling, the Sky Is Falling!" *Newsweek*. 129(22) (June 2, 1997): 57.

Clausing, Jeri. "'Millennium Czar' to Wrestle With Year 2000 Bug." *The New York Times.* March 10, 1998. https://archive.nytimes.com/www.nytimes.com/library/tech/98/03/cyber/articles/10millennium.html

_____. "New Report Warns of Shortfalls for 2000." *The New York Times.* March 18, 1998. https://archive.nytimes.com/www.nytimes.com/library/tech/98/03/cyber/articles/18millennium.html

_____. "Year 2000 Council Holds First Meeting." *The New York Times.* April 17, 1998. https://archive.nytimes.com/www.nytimes.com/library/tech/98/04/cyber/articles/17millennium.html

_____. "Federal Reserve Official Warns of Year 2000 Bug." *The New York Times.* April 29, 1998. https://archive.nytimes.com/www.nytimes.com/library/tech/98/04/cyber/articles/29millennium.html

_____. "IRS Must Address Millennium Bug Before Other Issues, Agency's Chief Says." *The New York Times.* May 8, 1998. https://archive.nytimes.com/www.nytimes.com/library/tech/98/05/cyber/articles/08millennium.html

_____. "Lawmaker Gives the Government A Failing Grade on Millennium Bug." *The New York Times.* June 3, 1998.

https://archive.nytimes.com/www.nytimes.com/library/tech/98/06/cyber/articles/03millennium.html

_____. "New Ventures Arise to Alert the General Public to the Millennium Bug." *The New York Times.* July 3, 1998. https://archive.nytimes.com/www.nytimes.com/library/tech/98/07/cyber/articles/03millennium.html

_____. "U.S. Announces New Campaign for Millennium Readiness." *The New York Times.* July 29, 1998. https://archive.nytimes.com/www.nytimes.com/library/tech/98/07/cyber/articles/29millennium.html

_____. "U.S. Deserves 'D' Grade on Millennium Bug, New Report Says." *The New York Times.* September 9, 1998. https://archive.nytimes.com/www.nytimes.com/library/tech/98/09/cyber/articles/09millennium.html

_____. "Senate Panel Predicts Transport Breakdowns in 2000." *The New York Times*. September 10, 1998. https://archive.nytimes.com/www.nytimes.com/library/tech/98/09/cyber/articles/18millennium.html

_____. "Critics in Congress Question Year 2000 Liability Bill." *The New York Times*. September 18, 1998. https://archive.nytimes.com/www.nytimes.com/library/tech/98/09/cyber/articles/18millennium.html

_____. "Year 2000 Compromise Bill Is Opposed by Trial Lawyers." *The New York Times.* September 21, 1998. C9.

_____. "Legislation Limiting Year 2000 Liability Is Introduced." *The New York Times*. February 24, 1999. C2.

Cohen, Adam. "The Y2K Bug Goes to Court." *Time Magazine.* 153(15) (April 19, 1999): 45.

COG Information Subcommittee. *Year 2000 Best Practices Manual*. Washington: Metropolitan Washington Council of Governments, 1998.

Collett, Stacy. "FDIC Calls for Y2K Safety Net." *Computerworld.* 33(25) (June 21, 1999): 47.

Collins, Gail. "Public Interests; Overkilling Y2K." *The New York Times.* January 4, 2000.

Comerford, Richard. "Y2K Testing: Does Success Matter?" *IEEE Spectrum.* 36(7) (July 1999): 71-73.

Comerford, Richard with Perry, Tekla S. "Brooding on the Year 2000." *IEEE Spectrum.* 35(6) (June 1998): 68-73.

Computerworld Staff. "What Did Go Wrong. A Global Roundup of Y2K Glitches." *Computerworld.* 34(2) (January 10, 2000): 19.

Cook, Wade B. *Y2K Gold Rush.* Seattle: Gold Leaf Press, 1999.

Cooper, Michael. "Preparing Computers for Century's End." *The New York Times.* February 20, 1998.

Cope, Jim. *Y2K Lessons Learned from World-Class Companies.* Indianapolis: QUE,1999.

Coral Ridge Ministries. *Answers to the most important questions about Y2K.* Ft. Lauderdale: Coral Ridge Ministries, 1998.

Cowles, Rick. *Electric Utilities and Y2K.* Self-published, 1998.

Day, John. *2000 Countdown to Crisis.* Ramsey: Oscar Publishing, 1997.

de Jager, Peter. "Doomsday 2000." *Computerworld.* 27(36) (September 6, 1993): 105, 108-109.

_____. "The writing on the wall." *Datamation*. 40(9) (May 1, 1994): 88.

_____. "Take a reporter to lunch." *Datamation*. 42(1) (January 1, 1996): 76.

_____. "Lock up your year 2000 staff." *Datamation*. 42(10) (May 15, 1996): 102.

_____. "Take a year 2000 inventory." *Datamation*. 42(14) (August 1996): 102.

_____. "How big is your year 2000 mess?" *Datamation*. 42(15) (September 1996): 109.

_____. "Take the year 2000 test!" *Datamation*. 42(16) (October 1996): 76.

_____. "Year 2000: manage your own expectations." *Datamation*. 43(1) (January 1997): 69.

_____. "A taste of testing." *Datamation*. 43(2) (February 1997): 39.

_____. "Walking on thin ice." *Datamation*. 43(4) (April 1997): 31.

_____. “The silver bullet solution.” *Datamation*. 43(5) (May 1997): 33.

_____. “A snake in the silicon.” *Datamation*. 43(6) (June 1997): 31.

_____. “Government in action.” *Datamation*. 43(7) (July 1997): 27.

_____. “Dear Mr. Gates.” *Datamation*. 43(8) (August 1997): 27.

_____. “Collateral benefits.” *Datamation*. 43(9) (September 1997): 27.

_____. “Year 2000’s silver lining.” *Datamation*. 43(11) (November 1997): 31.

_____. “Entering the black zone.” *Datamation*. 44(1) (December 1997): 39.

_____. “Revisiting Y2K certification.” *Datamation*. 44(2) (February 1998): 25.

_____. “It’s Time to Decide.” *Wall Street Journal.* February 19, 1998.

_____. “Year 2000: Dollar by Dollar.” *Wall Street Journal.* April 27, 1998.

_____. “The year 2000 last-ditch response: systemic triage.” *Air Conditioning, Heating & Refrigeration News*. 204(10): July 6, 1998.

_____. “Around the World in 00 Days.” *Wall Street Journal.* July 14, 1998.

_____. *Peter de Jager’s The Bug Stops Here!!!* Baton Rouge: de Jager Company, 1999.

_____. “Y2K: So Many Bugs…So Little Time.” *Scientific American.* 280(1) (January 1999): 88-93.

_____. “Y2K: No Sham—A Success Story.” *The Washington Post.* January 3, 2000.

de Jager, Peter, and Bergeon, Richard. *Managing 00: Surviving the Year 2000 Computing Crisis.* New York: John Wiley and Sons, Inc., 1997.

_____. *Countdown Y2K: Business Survival Planning for the Year 2000.* New York: John Wiley and Sons, Inc., 1999.

Deck, Stewart. “Investing in year 2000.” *Computerworld.* 31(16) (April 21, 1997): 123.

Delohery, Pat D. and Buckso, Jack. “A blessing in disguise.” *Datamation*. 43(10) (October 1997): 29.

Dieterich, Robert. “Happy millennium!” *Computerworld.* 31(13) (March 25, 1996): 86.

Dionne Jr., E.J. "Y2K: Profits From Doom." *The Washington Post.* January 7, 2000.

Dow Jones. "S.E.C. to Ease Year 2000 Monitoring." *The New York Times*. January 6, 2000.

Dr. 'X.' *Dr. "X's" Underground Guide to Y2K Medical Survival.* Phoenix: AZ, 1998.

Dunn, Ashley. "Y2K Industry Closing Shop After Quiet Passage to 2000." *Los Angeles Times.* January 5, 2000.

Eaton, Leslie. "Elixirs for a Digital Headache: Pain and Profit for Investors as Computers Confront Year 2000." *The New York Times.* April 8, 1997.

Eckholm, Erick. "China Says Its Computers Are 'Basically Ready' for Year 2000." *The New York Times*. December 2, 1999.

Editorial Board. "The Millennium Bug." *The New York Times.* May 28, 1998.

_____. "The Millennium Bug Looms." *The New York Times.* August 2, 1998.

_____. "Liability for the Millennium Bug." *The New York Times*. April 26, 1999.

_____. "Watching for the Y2K Bug." *The New York Times*. December 30, 1999.

_____. "The Wisdom of Y2K Planning." *The New York Times*. January 3, 2000.

Edwards, Allen, Mack, John, and Stephens, Mark. *Y2K Ready or Not? Preparing for the Year 2000: A handbook and Resource Guide for Natural and Man-Made Disasters!* Disaster Management Group, 1999.

Edwards, John. "Employment in 1999: Opportunities Amid Challenges." *IEEE Computer.* 32(1) (January 1999): 19-22.

Eick, Stephen G. "A Visualization Tool for Y2K." *IEEE Computer.* 31(10) (October 1998): 63-69.

Eirich, Ken and Eirich, Nancy. *How To Survive Y2K Chaos in the City: A Preparedness and Self-Reliance Handbook.* St. Catherine's: Infoage Consulting and Publishing, 1998.

Ellin, Abby. "The Generation Gap in Year 2000 Plans." *The New York Times*. December 19, 1999.

Erman, Lynn. "For Doomsday Hoarders, What Now?" *The New York Times*. January 6, 2000.

Ernsberger Jr., Richard; Matthews, Owen; Pappas, Leslie; Ford, Maggie; and Margolis, Mac. "Will the Bug Bite?" *Newsweek*. December 6, 1999. https://www.newsweek.com/will-

bug-bite-163086

Essick, Kristi. "Firms at Comdex U.K. warned on year 2000." *Computerworld.* 31(17) (April 28, 1997): 66.

Evensky, Harold. *Y2K and Your Money*. Midlothian: Sitting Duck Press, 1999.

Faiola, Anthony. "Gearing Up for a Big Countdown." *The Washington Post.* December 31, 1995.

Fallows, James. "Hurry Up Please It's Time." *The New York Review of Books.* September 23, 1999.

Farrar, Steve. *Spiritual Survival During the Y2K Crisis*. Nashville: Thomas Nelson, Inc., 1999.

Feder, Barnaby J. "For Computers, the Year 2000 May Prove a Bit Traumatic." *The New York Times.* May 7, 1988.

_____. "Compressed Data; 40% of Big Companies Face 'Millennium Bug'." *The New York Times.* July 20, 1998.

_____. "Test Pushes Wall Street's Computers Into 2000 Without Mishaps." *The New York Times.* July 23, 1998.

_____. "Software Makers Win a Round in Year 2000 Court Fight." *The New York Times.* September 7, 1998.

_____. "SEC Guidelines to Yield Data on Year 2000 Risks." *The New York Times*. October 5, 1998.

_____. "The Town Crier for the Year 2000." *The New York Times*. October 11, 1998.

_____. "Dispute on a Wrinkle in the Year 2000 Problem." *The New York Times*. November 9, 1998.

_____. "At the U.N., Nations Are Urged to Prepare for 'Millennium Bug.'" *The New York Times*. December 12, 1998.

_____. "Companies Prepare for Year 2000." *The New York Times*. January 4, 1999.

_____. "The Millennium Glitch, and Life and Death." *The New York Times*. January 24, 1999.

_____. "Group Rethinks Publicly Rating 30 Nations' Year 2000 Readiness." *The New York Times*. January 27, 1999.

_____. "Fear of the Year 2000 Bug Is a Problem, Too." *The New York Times*. February 9, 1999.

_____. “As Tough As, Well, Netting a Butterfly.” *The New York Times*. March 14, 1999.

_____. “Swindles Start to Flourish Amid Concern Over Year 2000 Problems.” *The New York Times*. March 15, 1999.

_____. “3 Industries Pass Tests for Year 2000 Computer Glitch.” *The New York Times*. April 12, 1999.

_____. “A Trickle of Year 2000 Lawsuits.” *The New York Times*. April 12, 1999.

_____. “Studies Cite Lag in Year 2000 Projects.” *The New York Times*. May 6, 1999.

_____. “Worriers, Start Your Engines: Contingency Plans Hit Their Stride for Year 2000.” *The New York Times*. May 27, 1999.

_____. “Few Managers Expecting Year 2000 Glitches.” *The New York Times*. June 21, 1999.

_____. “More Countries Studying Year 2000 Disruptions, U.N. Panel Finds.” *The New York Times*. June 23, 1999.

_____. “Year 2000 Problem Held Minimal for City Services.” *The New York Times*. June 30, 1999.

_____. “GTE Sues 5 Insurers in a Bid To Spread Year 2000 Costs.” *The New York Times*. July 2, 1999.

_____. “The Dominant Position of the Gartner Group.” *The New York Times*. July 5, 1999.

_____. “As the Clock Nears Midnight; Companies That Danced in the Year 2000 Market Need to Find New Steps Before the Ball Ends.” *The New York Times*. July 15, 1999.

_____. “A Year 2000 Peace Corps.” *The New York Times.* July 25, 1999.

_____. “Doomsayer Pushes Year 2000 Panic Button With Old Data.” *The New York Times*. August 22, 1999.

_____. “In My…Briefcase: Edward Yardeni.” *The New York Times.* August 29, 1999.

_____. “Putting New Flaws in Cleaned Systems.” *The New York Times*. August 30, 1999.

_____. “A September Dress Rehearsal For the Year 2000 Computer Test.” *The New York Times.* September 9, 1999.

_____. “Few Seem Ready for Forum on Getting Ready for 2000.” *The New York Times.*

September 9, 1999.

_____. "The Coast Guard Puts on a Millennial Show." *The New York Times.* September 16, 1999.

_____. "Panel on 2000 Finds News Largely Good." *The New York Times*. September 23, 1999.

_____. "Founder of Year 2000 Service Quits to Try Different Approach." *The New York Times*. September 27, 1999.

_____. "Year 2000 Concerns? Check the Latest Poll." *The New York Times.* October 4, 1999.

_____. "Heading a Year 2000 Team as Time Runs Out." *The New York Times.* October 13, 1999.

_____. "Year 2000 Campaigners Take to the Streets." *The New York Times.* October 18, 1999.

_____. "Passivity Is the Word on Year 2000 Marketing; Most Big Companies Playing It Low Key." *The New York Times*. October 21, 1999.

_____. "Year 2000 Activists Share Tales of Public Apathy." *The New York Times*. October 24, 1999.

_____. "Keeping Home PC's Afloat Through Y2K." *The New York Times*. October 28, 1999.

_____. "City Sites For Year 2000: A Mixed Bag." *The New York Times.* November 4, 1999.

_____. "Clinton Optimistic About Year 2000." *The New York Times*. November 11, 1999.

_____. "Fixing Year 2000 Computer Problems May Be as Simple as Counting to 16." *The New York Times*. November 15, 1999.

_____. "Final Grades Are Ready on Year 2000 Readiness." *The New York Times*. November 22, 1999.

_____. "Learning to Live With Year 2000 Concerns." *The New York Times*. November 29, 1999.

_____. "As 2000 Closes In, Newark Readies New 911 Center." *The New York Times*. December 6, 1999.

_____. "New Projects Should Rise After 2000." *The New York Times*. December 6, 1999.

_____. "Concern Over Year 2000 Remains Low in Surveys." *The New York Times*. December 13, 1999.

_____. "Year 2000 Computer Problems May Get an Alibi." *The New York Times*. December 14,

1999.

_____. "For Worriers, Winding Down on Year 2000." *The New York Times*. December 27, 1999.

_____. "On the Year 2000 Front, Humans Are the Big Wild Cards." *The New York Times*. December 28, 1999.

_____. "Internet's Cheering Squad Nervously Watches Clock." *The New York Times*. January 1, 2000.

_____. "Few Year 2000 Glitches Are Reported on First Working Day." *The New York Times*. January 4, 2000.

Feder, Barnaby J. and Pollack, Andrew. "Computers and Year 2000: A Race for Security (and Against Time)." *The New York Times*. December 27, 1998

Feder, Barnaby J. and Revkin, Andrew C. "Vast Efforts To Fix Computers Defended (and It's Not Over)." *The New York Times*. January 1, 2000.

Feiler, Jesse and Butler, Barbara. *Finding and Fixing Your Year 2000 Problem: A Guide for Small Businesses and Organizations.* Boston: AP Professional, 1999.

Feldhahn, Shaunti Christine. *Y2K, the Millennium Bug: A Balanced Christian Response*. Sisters: Multnomah Publishers, 1998.

_____. *Y2K, the Millennium Bug: Youth Edition*. Sisters: Multnomah Publishers, 1999.

_____. *Y2K, the Millennium Bug: Resource Guide, Strategies for Christian Organizations.* Sisters: Multnomah Publishers, 1999.

Finkelstein, Anthony and Thomas, Martyn. "Head-to-head: looking back at Y2K." *Computing & Control Engineering Journal.* 11(4) (August 2000: 156-159.

Freeman, Leland G. "Pick a portfolio and a partner." *Datamation.* 43(1) (January 1997): 46.

Freeman, Leland G. and Meador, C. Lawrence. "Year 2000: the domino effect." *Datamation.* 43(1) (January 1997): 40.

Friedman, Thomas L. "Foreign Affairs; The Spirit of Y2K." *The New York Times*. January 7, 2000.

Froese, Arno and Froese, Joel. *When Y2K Dies: What to expect during the final days of the Millennium Countdown.* West Columbia: The Olive Press, 1999.

Fuerbringer, Jonathan. "Year 2000 Insurance Is Hot on Wall St., but Not as a Sign of Fear." *The New York Times*. November 13, 1999.

_____. "Bond Investors Showing Less Year-End Fear." *The New York Times*. December 25, 1999.

_____. "Market Analyst Concedes Recession Forecast Wrong." *The New York Times*. January 6, 2000.

Gaffney, Michael G. *Y2K and the American Dream: A Practical Guide for Personal Millennium Readiness.* San Jose: toExcel, 1999.

Gause, Andrew. *Y2Kaos: How will YOU be affected?* Hilton Head Island: SDL Press, 1998.

Gauss, James F. *Y2K…Crying Wolf or World Crisis?* North Brunswick: Bridge-Logos Publishers, 1998.

Gillin, Paul. "The problem you may not know you have." *Computerworld.* 18(7) (February 13, 1984): 7-8.

Gleick, James. "Fast Forward; Oh-Oh." *The New York Times Magazine.* June 2, 1996.

_____. "Fast Forward; Doomsday Machines." *The New York Times Magazine*. January 24, 1999.

Gomes, Lee. "Fear of Flying? Air Carriers Ground Flights on Dec. 31 or Plan to Cut Them 20%." *Wall Street Journal.* December 2, 1999.

Goth, Greg. "Y2K in Brief: Concern Rising About Y2KA (the Y2K Aftermath)." *IEEE Computer.* 32(1) (January 1999): 26.

_____. "Y2K in Brief: UN Urges Members to Tackle Y2K Problem." *IEEE Computer.* 32(2) (February 1999): 19.

_____. "Y2K in Brief: US Corporations' Y2K Efforts Go Global." *IEEE Computer.* 32(3) (March 1999): 21.

_____. "Y2K in Brief: Groups Help Third World Fight Y2K Problem." *IEEE Computer.* 32(4) (April 1999) 20.

_____. "Y2K in Brief: Utilities Say They Are Ready for Y2K." *IEEE Computer.* 32(5) (May 1999): 23.

Greenburg, Dan. *The Zack Files: How I Fixed the Year 1000 Problem.* New York: Grosset and Dunlap, 1999.

Greene, Donna. "County Readies for Computer Glitch." *The New York Times.* June 1, 1997.

Greenman, Catherine. "Who, What, When, Where and Y2K; The Stay-at-Homes Have Plenty of Chances to See the Parties, or Problems, Unfold." *The New York Times*. December 30, 1999.

Gregori, Julian. *What Will Become of Us? Counting Down to Y2K.* Gerardstown: The International Crisis Management Center, 1998.

Gugliotta, Guy. "Computers Have a Date With a Potentially Messy Destiny." *The Washington Post.* February 28, 1995.

Hall, Ted, and Smith, C.L. *Beat the Beast!—Y2K Preparedness Guidebook.* Mena: Clear Creek Press, 1998.

Hamblen, Matt. "Consultancy puts year 2000 methodology on CD-Rom." *Computerworld.* 31(13) (March 31, 1997): 28.

_____. "Utilities' systems aren't likely to be fixed by 2000." *Computerworld.* 32(20) (May 18, 1998): 3.

_____. "De Jager: Lighten Up on Y2K." *Computerworld.* 33(25) (June 21, 1999): 47.

Hamilton, Robert A. *The New York Times.* "Computer Crunch at the Millennium." *The New York Times.*

Hanegraaff, Hank. *The Millennium Bug Debugged: The Facts Behind All the Y2K Sensationalism*. Minneapolis: Bethany House Publishers, 1999.

Hansell, Saul. "Waiting for Millennium 'Panic Level' to Rise." *The New York Times.* January 5, 1998.

_____. "An Extra Day to Fine Tune 1,000 Years." *The New York Times.* January 19, 1998.

Hayashi, Alden M. "Of IT and anesthesia." *Datamation.* 43(8) (August 1997): 33.

Hayes, Frank. "Frank Hayes/Frankly Speaking: Feeling Cheated?" *Computerworld.* 34(2) (January 10, 2000): 82.

Hayes, Linda. "The year 2000 and the S&L crisis." *Datamation.* 43(1) (January 1997): 75.

Heard, Alex and Klebnikov, Peter. "Apocalypse Now. No, Really. Now!" *The New York Times Magazine*. December 27, 1998.

Heirtzler, Robyn, Walker, Larry, and Walker, Jeannie. *Dutch Oven and Outdoor Cooking: Y2K Edition*. American Fork: WH Publishing, 1999.

Hellman, Paul. "Another Last Word on Y2K." *The New York Times*. December 24, 1999.

Hillis, Danny. "Why Do We Buy the Myth of Y2K?" *Newsweek*. 133(22) (May 31, 1999): 12.

Ho, Rodney. "Many Small Business Owners Shrug at Year 2000 Problem." *Wall Street Journal.* June 2, 1998.

Hoffman, Thomas. "Consultant encourages year 2000 snitching." *Computerworld.* 32(3) (January 19, 1998): 6.

_____. "Vaulting Past The Date Change." *Computerworld.* 33(51) (December 20, 1999): 44.

Hoge, Warren. "Britain Moves to Combat 'Millennium Bug.'" *The New York Times.* March 31, 1998.

Hunt, Dave. *Y2K: a Reasoned Response to Mass Hysteria.* Eugene: Harvest House Publishers, 1999.

Hutchings, N. W., and Spargimino, Larry. *Y2K = 666?* Oklahoma City: Hearthstone Publishing, 1998.

Hyatt, Michael S. *The Millennium Bug: How to Survive the Coming Chaos.* New York: Broadway Books, 1998.

_____. *The Y2K Personal Survival Guide: Everything you need to know to get from this side of the crisis to the other*. Washington: Regenery Publishing, Inc., 1999.

Hyatt, Michael and Grant, George. *Y2K: The Day the World Shut Down.* Nashville: Word Publishing, 1998.

Irwin, Suzanne. *Y2K Blackout: A Novel*. Alberta: One Way Publishing, 1999.

Janofsky, Michael. "Monitors of Missiles At Year 2000 Note Relief." *The New York Times*. January 1, 2000.

Jeffrey, Grant R. *Prince of Darkness: Antichrist and the New World Order.* Toronto: Frontier Research Publications, 1994.

_____. *Millennium Meltdown: Spiritual and Practical Strategies to Survive Y2K.* Wheaton: Tyndale House Publishers, Inc., 1998.

Jeffrey, Grant R. and Hunt, Angela. *Flee the Darkness: A Novel.* Nashville: Word Publishing, 1998.

Jesse, Chris. *Teaching Chipmunks to Dance: The business leaders' guide to making the distributed enterprise Year 2000 Compliant.* Dubuque: Kendall/Hunt Publishing Company, 1998.

Johnson, Dirk. "The Millennium Party, or Another Day at Work?" *The New York Times*. December 25, 1999.

Johnson, George. "For Y2K Utopians, a Chance to Remake the System." *The New York Times*. February 14, 1999.

Johnston, David Cay. "I.R.S. Anticipates Year 2000 Well Ahead, Early in 1999." *The New York Times*. January 4, 1999.

Jones, Capers. *The Global Economic Impact of the Year 2000 Software Problem.* Version 4 – September 23, 1996. Burlington: Software Productivity Research, Inc. 1996.

_____. *The Year 2000 Software Problem: Quantifying the Costs and Assessing the Consequences.* New York: the ACM Press, 1998.

_____. "Year 2000: what's the real cost?" *Datamation*. 43(3) (March 1997): 88.

Joseph, Mark. *Deadline Y2K: A Novel.* New York: St. Martin's Press, 1999.

Junod, Tom. "365 Days to the Apocalypse and We Still Don't Know Where to Hide the Jews." *Esquire.* January 1, 1999.

Kadlec, Daniel. "Y2 Buy Stocks." *Time Magazine.* 154(24) (December 13, 1999): 120.

Kador, John. "Panic in the year zero." *Datamation*. 44(1) (December 1997): 60.

Kappelman, Leon (ed). *Year 2000 Problem: Strategies and Solutions from the Fortune 100.* Boston: International Thomson Computer Press, 1997.

_____. "2000's leadership vacuum." *InformationWeek.* 673 (March 16, 1998): 147.

_____. "Face down those Y2K fears." *InformationWeek.* 679 (April 27, 1998): 204.

_____. "Across the great divide." *InformationWeek.* 685 (June 8, 1998): 192.

_____. "The invisible war rages on." *InformationWeek.* 692 (July 20, 1998): 102.

_____. “Time to debunk Y2K myths.” *InformationWeek.* 702 (September 28, 1998): 172.

_____. “Last chance for Y2K candor.” *InformationWeek.* 708 (November 9, 1998): 106.

_____. “Y2K’s unexpected benefits.” *InformationWeek.* 715 (January 4, 1999): 94.

_____. “May the truth be with you.” *InformationWeek.* 721 (February 15, 1999): 198.

_____. “Keep the bite in Y2K law.” *InformationWeek.* 730 (April 19, 1999): 172.

_____. “The courage to change.” *InformationWeek.* 734 (May 17, 1999): 142.

_____. “Another expensive mistake.” *InformationWeek.* 745 (July 26, 1999): 124.

_____. “More Y2K risks to ponder.” *InformationWeek.* 750 (August 30, 1999): 166.

_____. “Lessons Learned from Y2K.” *InformationWeek.* 754 (September 27, 1999). 314-319.

_____. “Y2K ain’t over till it’s over.” *InformationWeek.* 754 (September 27, 1999): 484.

_____. “For Y2K, trust is not enough.” *InformationWeek.* 758 (October 25, 1999): 152.

_____. “More than just a moment in time.” *InformationWeek.* 766 (December 20-December 27, 1999): 114.

_____. “Millennium Crunch. Three Cheers for the Victors!” *InformationWeek.* 772 (February 7, 2000). 185.

_____. “Some Strategic Y2K Blessings.” *IEEE Software.* 17(2) (March/April 2000): 42-46.

Kappelman, Leon; Strassmann, Paul; Jones, Capers; Yourdon, Ed. “Experts debate costs of 2000.” *Computerworld*. 32(23) (June 8, 1998): 40.

Kedrosky, Paul. “To Figure Out Y2K Hype, Follow the Money.” *Wall Street Journal.* July 20, 1998.

Kellner, Mark A. *Y2K: Apocalypse or Opportunity?* Wheaton: Harold Shaw Publishers, 1999.

Kelly, Jason. *Y2K: It’s Already Too Late*. Los Angeles: Jason Kelly Press, 1998.

Keogh, Jim. *Solving The Year 2000 Problem.* Boston: AP Professional, 1997.

Keyes, Tony. *The Year 2000 Computer Crisis: An Investor’s Survival Guide*. Brookeville:

Edwards Brothers Printing, 1997.

Kihlstadius, Dan and Tammy. *The Christian's Y2K Preparedness Handbook*. Bloomington: The Home Computer Market, Inc., 1999.

King, Julia. "Ready for Worst, Expecting Little." *Computerworld.* 33(51) (December 20, 1999): 44.

Kinman, Dwight L. *The World's Last Dictator (Expanded Edition).* New Kensington: Whitaker House, 1999.

Kolkenflik, David. "Morella credited with sounding alarm early, often about Y2K." *The Baltimore Sun.* December 30, 1999.

Kopit, Artur. *Y2K: a play*. Woodstock: The Overlook Press, 2000.

Kuo, L. Jay. and Duo, Edward M. *Crisis Investing for the Year 2000: How to Profit From the Coming Y2K Computer Crash.* Secaucus: Birch Lane Press, 1999.

Lacayo, Richard. "The End of the World as We Know It?" *Time Magazine.* 153(2) (January 18, 1999): 60-70.

Lacey, Marc. "F.B.I Warns Criminals That It's Year 2000 Ready." *The New York Times*. November 5, 1999.

_____. "U.S. Is Set to Monitor the Clock Shift From a Central Office." *The New York Times*. December 28, 1999.

_____. "Big Moment Comes and Goes, Without Any Disasters in Sight." *The New York Times*. January 2, 2000.

Laddon, Judy, Atlee, Tom, and Shook, Larry (eds). *Awakening: The Upside of Y2K.* Spokane: The Printed Word, 1998.

Lalonde, Peter and Lalonde, Paul. *The Mark of the Beast: Your Money, Computers, and the End of the World.* Eugene: Harvest House Publishers, 1994.

Landler, Mark. "When the Dragon Awakes…and Finds That It's Not 1999 Anymore." *The New York Times*. May 11, 1999.

Leach, Ronald J. *Why 2K?* Self-published, 2012

Lear, Anne. "Y2K in Brief: Latin America Faces Y2K Difficulties." *IEEE Computer.* 32(6) (June 1999): 22.

_____. "Y2K in Brief: Y2K Command Centers Focus on Containment." *IEEE Computer.* 32(7) (July 1999): 14.

_____. "Y2K in Brief: Global Banking Simulation is Successful." *IEEE Computer.* 32(8) (August 1999): 18.

_____. "Y2K in Brief: UN Conference Highlights Concerns, Progress." *IEEE Computer.* 32(9) (September 1999): 22.

_____. "Y2K in Brief: Contingency Plans Should Extend into 2000." *IEEE Computer.* 32(10) (October 1999): 19.

_____. "Y2K in Brief: US Issues Y2K Travel Forecast." *IEEE Computer.* 32(11) (November 1999): 19.

_____. "Y2K in Brief: Y2K Failures Could Occur Throughout 2000." *IEEE Computer.* 32(12) (December 1999): 22.

_____. "Y2K Rollover: Few Problems, Many Questions." *IEEE Computer.* 33(2) (February 2000): 22.

Lefkon, Dick (ed). *Year 2000: Best Practices for Y2K Millennium Computing*. Upper Saddle River: Prentice Hill PTR, 1998.

Leland, John; Underwood, Anne; Rees, Matt; Sieden, Jill Jordan; Murr, Andrew. "Millennium Madness." *Newsweek*. 134(18) (November 1, 1999): 70-71.

Leslie, Jacques. "Powerless: What happens at 00:00:01 on January 1?" *Wired Magazine.* 7(4) (April 1999): 118-125.

Levy, Steven. "The Year 1,000 Glitch." *Newsweek*. 127(26) (June 24, 1996): 92.

_____. "Will the bug bite the bull?" *Newsweek.* 131(18) (May 4, 1998): 62.

_____. "The Bug That Didn't Bite." *Newsweek*. 135(2) (January 10, 2000): 41.

Levy, Steven; Hafner, Katie; Vistica, Gregory; and Thomas, Rich. "The Day the World Shuts Down." *Newsweek*. 129(22) (June 2, 1997): 52-54, 56-59.

Lewis, Peter H. "Exterminating the 2000 Bug From Home Systems." *The New York Times.* July 21, 1998.

Leyner, Mark. "Resolutions Without the Guilt." *Time Magazine.* 154(27) (December 31, 1999): 240.

Lindsey, Hal, and Ford, Cliff. *Facing Millennial Midnight: The Y2K Crisis Confronting America and the World.* Minneapolis: Western Front Publishing, 1998.

Logan, Robert G. *Double Whammy: Y2K and the Coming Recession.* Wyomissing: ROI Publishing, 1999.

Lohr, Steve. "With a Whole Lot at Stake, I.B.M. and Microsoft Await Year 2000." *The New York Times*. December 31, 1999.

_____. "Computers Prevail in First Hours of '00." *The New York Times*. January 1, 2000.

Lorch, Donatella and Murr, Andrew. "The Real Y2K Fireworks." *Newsweek*. 134(25) (December 20, 1999): 32.

Lord, Jim. *A Survival Guide for the Year 2000 Problem.* J. Marion Publishing, 1997.

Ludwig, Mark. *The Millennium Bug: Gateway to the Cashless Society?* Show Low: American Eagle Publications, Inc., 1998.

MacGregor, Jerry, and Charles, Kirk. *Y2K Family Survival Guide*. Eugene: Harvest House Publishers, 1999.

MacCollam, Joel. *Y2K Global: Storm Warning Or Hurricane Alert?* Carlsbad: World Emergency Relief Publishing, 1999.

Maglitta, Joseph E. "Staffing 'Fair Warning!'" *Computerworld.* 32(3) (January 19, 1998): 94-95.

Malloy, Amy. "It's Tomorrow Today." *Computerworld.* 32(3) (January 19, 1998): 87-88.

Manion, Mark; and Evan, William M. "The Y2K Problem: Technological Risk and Professional Responsibility." *Computers and Society.* 29(4) (December 1999): 24-29.

Marks, Scott, Kaufman, Karl, and Kaufman, Patrice. *Y2K—It's Not Too Late: Complete Preparedness Guide*. Ferndale: Mercury Publications, 1999.

Martin, Robert A. "Dealing with Dates: Solutions for the Year 2000." *IEEE Computer.* 30(3) (March 1997): 44-51.

Mauldin, John F. *How to Profit from the Y2K Recession…by converting the Year 2000 Crisis into an opportunity for your investments and business.* New York: St. Martin's Press, 1999.

McAlvany, Donald S. *Y2K Crisis: Preparing for the Coming Computer Crash!* Phoenix: Western Pacific Publishing Co., 1998.

McAlvany, Donald S. *The Y2K Tidal Wave: Year 2000 Economic Survival.* Toronto: Frontier Research Publications, Inc., 1999.

McBride, Laura Harrison. *The Unofficial Guide to Surviving Y2K and Beyond*. New York: Macmillan General Reference, 1999.

McCarthy, Vance. "Keep the Millennium Virus off your net." *Datamation.* 42(1) (January 1, 1996): 55.

McCullagh, Declan. "The Year We Noticed Y2K." *Wired Magazine.* December 31, 1998. https://www.wired.com/1998/12/the-year-we-noticed-y2k/

_____. "A True Y2K Disaster: the Movie." *Wired Magazine.* November 20, 1999. https://www.wired.com/1999/11/a-true-y2k-disaster-the-movie/

McGeary, Johanna; Calabresi, Massimo; Novak, Viveca; Thompson, Mark; Sancton, Thomas; Kuchinskas, Susan; Yusufzai, Rahimullah. "New Year's Evil?" *Time Magazine.* 154(27) (December 31, 1999): 204-207.

McGrath, Peter. "Potholes on the Road Ahead." *Newsweek*. 134(12) (October 11, 1999): 78.

McGuigan, Dermot, and Jacobson, Beverly. *Y2K & Y-O-U: The Sane Person's Home-Preparation Guide (a real goods solar living book).* White River Junction: Chelsea Green Publishing Company, 1999.

Melymuka, Kathleen. "Year 2000 whistleblower derailed." *Computerworld.* 32(20) (May 18, 1998): 3.

_____. "It's Only a Movie, But *Y2K* Raises Real Concerns." *Computerworld.* 33(46) (November 15, 1999): 4.

_____. "Lawyer Advises Gearing Up Now for Y2K Suits." *Computerworld.* 34(1) (January 3, 2000): 20.

Meyer, Michael. "A Pop Quiz for Wall Street – So Far, Passing Grades." *Newsweek.* 132(4) 4 (July 27, 1998): 38.

_____. "Now, the 'Disposable' Computer." *Newsweek*. 132(17) (October 26, 1998): 86

Miller, Greg. "Debunking Year 2000's Computer Disaster." *Los Angeles Times.* November 3, 1997.

Moramarco, Fred. "A Quick Fix for Bug 2000." *Newsweek.* 131(24) (June 15, 1998): 16.

Morgan, Bradford. *Y2K: The Millennium Crisis, a Novel.* Seattle: Hara Publishing, 1999.

Morton, David. "The Electrical Century: Computers Everything: From the Pushbutton Factory to the Y2K Bug." *Proceedings of the IEEE.* 87(12) (December 1999): 2143-2145.

Morrone, Wenda Wardell. *The Year 2000 Killers: Terrorism by Computer*. New York: Thomas Dunne Books, 1999.

Mrozek, John. *The Y2K Computer Crash Scenario.* Boulder: Paladin Press, 1998.

Munro, Neil. "The Big Glitch." *National Journal.* 30(25) (June 20, 1998): 142-149.

Murray, Jerome T., and Murray, Marilyn J. *The Year 2000 Computing Crisis: a Millennium Date Conversion Plan.* New York: McGraw Hill, 1996.

Murray, William J. and Armstron, Robert. *Y2K Stop the Madness! Exposing the Purveyors of Panic.* Fredericksburg: MFM Publishing, 1999.

Musante, Fred. "The Millennium Bug, A Bite or a Nibble?" *The New York Times*. January 3, 1999.

National Public Radio. "Interview: Canadian Business Consultant Peter de Jager Discusses His Web Site, Year2000.com, and His Decisiosn to Sell It On Ebay." *Weekend All Things Considered.* January 2, 2000. *Gale In Context: U.S. History* (https://link-gale-com.proxy.library.upenn.edu/apps/doc/A166113064/UHIC?u=upenn_main&sid=bookmark-UHIC&xid=7899640b.)

The New York Times. "A Web Site for Year 2000 Problems." *The New York Times*. May 8, 1999.

_____. "Peace Corps Issues Y2K Warnings." *The New York Times*. December 28, 1999.

Newing, Rod. "Spreading the good news about the year 2000." *Financial Times.* December, 2, 1998.

_____. "Prophet of doom fears confusion." *Financial Times.* October 6, 1999.

_____. "Unsympathetic response to huge Y2K effort leaves sour after-taste." *Financial Times.* January 19, 2000.

Noblet, Kevin. "Humans 1, Machines 0." *Times-News Weekender.* January 1, 2000.

Noer, Michael. "Y2K fear merchants." *Forbes.* March 12, 1998. Online: https://www.forbes.com/1998/03/12/feat.html?sh=49232ee74238

O'Brien, Timothy L. "Banks Stock Up on Cash, but Hoarders Stay Away." *The New York Times*. December 31, 1999.

Oehler, Mike. *The Hippy Survival Guide to Y2K.* Sandpoint: Keokee Co. Publishing, Inc., 1999.

O'Malley, Chris and McCullagh, Declan. "Apocalypse Not." *Time Magazine.* 151(23) (June 15, 1998): 62-65.

Party, Boston T. *Boston on Surviving Y2K and other lovely disasters.* Ignacio: Javelin Press, 1998.

Paul, Lauren Gibbons. "Year 2000 conversion: been there, done that." *Datamation*. 44(1) (December 1997): 50.

Payne, Jeffrey E. "Regulation and Information Security: Can Y2K Lessons Help Us?" *IEEE Security & Privacy.* 2(2) (March/April 2004): 58-61.

Paulien, Jon. *The Millennium Bug: Is this the end of the world as we know it?* Oshawa: Pacific Press Publishing Association, 1999.

Pear, Robert. "Computer Trouble Looms for States in 2000, U.S. Finds." *The New York Times*. November 27, 1998.

_____. "92% of Federal Computers Ready for 2000." *The New York Times*. April 1, 1999.

Perry, Tekla S. "Checking up on Y2K." *IEEE Spectrum.* 36(7) (July 1999): 61-70.

Petersen, Melody. "Consultant Sued for Expected Computer Malfunction in 2000." *The New York Times.* August 31, 1998.

Pollack, Andrew. "For Coders, a Code of Conduct." *The New York Times*. May 3, 1999.

_____. "Hollywood Filmmakers Pass on the Year 2000 Peril." *The New York Times*. November 21, 1999.

_____. "For Year 2000 Fix-It Crew, New Tasks or No Jobs." *The New York Times*. January 3, 2000.

Poniewozik, James; Harbert, Nancy; Jackson, David S.; Marshall, Elaine; Shuman, Mark; and Sullivan, Jake. "Auld Lang Sigh." *Time Magazine.* 154(22) (November 29, 1999): 56-66.

Porlier, Victor W. *Y2K: An Action Plan for January 1, 2000*. New York: Harper Collins, 1999.

Porter, Steven L. *Get Rich With Y2K: How to Cash in on the Financial Crisis in the Year 2000.* Colorado Springs: Piccadilly Books, 1999.

Potter, Thomas F. *Y2K: You Can Burn This Book!*. Denver: Chef Brio, LLC, 1998.

Poulsen, Kevin. "The Y2K Solution: Run for Your Life!!" *Wired Magazine.* August, 1, 1998. https://www.wired.com/1998/08/y2k-2/

Punch, Sean M. (ed). *GURPS Y2K: The Countdown to Armageddon.* Austin: Steve Jackson Games, 1999.

Putnam, Lawrence H. and Myers, Ware. "Year 2000 Work Comes Down to the Wire." *IEEE Software.* 16(1) (January/February 1999): 90-96.

Quinn, Jane Bryant and Ehrenfeld, Temma. "Bugged By Y2K?" *Newsweek*. 132(9) (August 31, 1998): 48.

_____. "Help! Y2K Is on the Way." *Newsweek*. 133(3) (January 18, 1999): 46.

_____. "Who's Afraid of Year Y2K?" *Newsweek*. 134(21) (November 22, 1999): 63.

Ragland, Bryce. *The Year 2000 Problem Solver: A Five-Step Disaster Prevention Plan.* New York: McGraw-Hill, 1997.

Rankin, Robert A. "Senate Panel Is Troubled By Gaps in Y2K Progress." *The Philadelphia Inquirer.* February 24, 1999. Business

Ratcliffe, Mitch. "Y2K: The Movie, reviewed and debunked." *ZDNet.* November 21, 1999. https://www.zdnet.com/article/y2k-the-movie-reviewed-and-debunked/

Reeve, Simon and McGhee, Colin. *The Millennium Bomb: Countdown to a £400 billion Catastrophe*. London. VISION Paperbacks, 1996.

Reuters. "Officials Talk of Year 2000 Concerns." *The New York Times*. September 8, 1999. https://archive.nytimes.com/www.nytimes.com/library/tech/99/09/biztech/articles/08year-sec.html

_____. "The Y2K Report Card." *Wired Magazine.* February 22, 1999.

_____. "Greenspan Addresses Y2K Problem." *The New York Times*. September 18, 1999. https://archive.nytimes.com/www.nytimes.com/library/tech/99/09/biztech/articles/18year.html

Revkin, Andrew C. "Elite Team At the Ready For a Glitch In Computers." *The New York Times*. December 31, 1999.

Revkin, Andrew C. and Feder, Barnaby J. "Zero Day Near, New York Asks, 'What If?'" *The New York Times*. November 27, 1999.

Richtel, Matt. “Expecting a Whimper, but Preparing for a Bang.” *The New York Times*. December 30, 1999.

Riordan, Teresa. “What computer quandary at century’s end? With a creative clock, 2000 can be read as 1980, or ’72.” *The New York Times.* April 28, 1997.

Roberts, Elizabeth. “A Wired Rush on an Unplugged World.” *Newsweek.* (June 7, 1998). https://www.newsweek.com/wired-rush-unplugged-world-167392

Robinson, Robin. “Survey Reported Decrease in Planned Y2K Shutdowns.” *Computerworld.* 34(1) (January 3, 2000): 20.

Robinson, Susan. *Whatcha Gonna Do If the Grid Goes Down? Preparing Your Household for the Year 2000.* Devner: Virtual Sage, 1999.

Rockett, Jerry W. *Trouble on the Horizon: Surviving Y2K.* New York: Writers Club Press, 1999.

Rogers, Avian M. *Y2K Family Survival Guide (with a foreward by Leonard Nimoy).* Nashville: Rutledgte Hill Press, 1999.

Romero, Simon. “Latin America Tackling Possible Computer Woes.” *The New York Times*. December 25, 1999.

Rosenbaum, David E. “Bill on Year 2000 Liability Is Set Aside in the Senate.” *The New York Times*. April 30, 1999.

_____. “House Passes Bill Limiting Year 2000 Liability.” *The New York Times*. May 13, 1999.

_____. “Senate Passes Bill to Curb Suits on Year 2000 Computer Bug.” *The New York Times*. June 16, 1999.

_____. “Vexing Party, Clinton Backs Year 2000 Law.” *The New York Times*. June 30, 1999.

Rubin, Howard. “Diary of a Y2K Consultant: Bracing for the Millennium.” *IEEE Computer.* 32(1) (January 1999): 51-56.

_____. “Rubin’s Y2K Diary: Mantras, Blacklists, and Precedents.” *IEEE Computer.* 32(2) (February 1999): 20.

_____. “Rubin’s Y2K Diary: Doing the Y2K Spin: Is Image Everything?” *IEEE Computer.* 32(3) (March 1999): 22-23.

_____. “Rubin’s Y2K Diary: Getting Down and Dirty.” *IEEE Computer.* 32(4) (April 1999): 21.

_____. "Rubin's Y2K Diary: Just Say YES Corps." *IEEE Computer.* 32(5) (May 1999): 24.

_____. "Rubin's Y2K Diary: Lashing Down the World." *IEEE Computer.* 32(6) (June 1999): 24.

_____. "Bracing for Zero Day." *IT Pro.* 1(3) (May/June 1999): 73-76.

_____. "Rubin's Y2K Diary: The Declaration of Interdependence." *IEEE Computer.* 32(7) (July 1999): 15.

_____. "Rubin's Y2K Diary: Paying the Price for Ubiquitous Connectivity." *IEEE Computer.* 32(8) (August 1999): 19.

_____. "Rubin's Y2K Diary: Are the Media Crying 'Sheep'?" *IEEE Computer.* 32(9) (September 1999): 23.

_____. "Rubin's Y2K Diary: Uncovering Weak Links in the Readiness Chain." *IEEE Computer.* 32(10) (October 1999):20.

_____. "Rubin's Y2K Diary: A Crisis of Arrogance." *IEEE Computer.* 32(11) (November 1999): 20-21.

_____. "Rubin's Y2K Diary: Will Fast Food Accelerate Y2K Collapse?" *IEEE Computer.* 32(12) (December 1999): 23.

_____. "Bolster Your Budget Proposals with IT Market Basket Statistics." *IT Pro.* 2(3) (May/June 2000): 51-54.

Rubin, Howard, and Robbins, Brian. *Evaluating Success of a Y2000 Project.* New Canaan: The Information Economics Press, 1998.

Saia, Rick. "Y2K survey reveals growing confidence in IT readiness." *Computerworld.* 33(51) (December 20, 1999): 36.

Samuelson, Robert J. "The Great Y2K Race." *The Washington Post.* July 15, 1998.

_____. "Self-Inflicted Cyber Wound?" *Newsweek*. 132(24) (December 14, 1998): 51.

_____. "The PC Boom—and Now Bust?" *Newsweek*. 133(14) (April 5, 1999): 52.

Sandberg, Jared and Kaplan, David. "Why Y2K Won't Die." *Newsweek*. 135(2) (January 10, 2000): 38-39.

Sanders, James. "Y2K: Don't Play It Again, Sam." *IEEE Software.* 15(3) (May/June 1998): 100-102.

Sanger, David E. "As Year 2000 Nears, U.S. Is Confident, Yet Cautious." *The New York Times*. December 27, 1999.

Savage, Jeff. *Y2K*. Austin: Raintree Steck-Vaughn Publishers, 2000.

Scheier, Robert L. "Year 2000: Fire, brimstone & upside." *Computerworld.* 31(43) (October 27, 1997): 93, 96.

Scheier, Robert L. and Hoffman, Thomas L. "Cashing in on Year 2000." *Computerworld.* 31(28) (July 14, 1997): 59-60.

Schmitt, Eric. "Congress Hears Status of Year 2000 Solutions." *The New York Times*. March 3, 1999.

_____. "Worry for Pentagon: Are Overseas Bases Ready for Year 2000 Computer Trouble?" *The New York Times*. September 8, 1999.

Schultz, James E. "Managing a Y2K Project—Starting Now." *IEEE Software.* 15(3) (May/June 1998): 63-71.

Schwartz, Matthew. "A Millennium Disaster: NBC's *Y2K: The Movie*." *Computerworld.* 33(47) (November 22, 1999): 38.

Shenon, Philip. "Public Lives: Washington's Man in the Middle of Millennium Madness." *The New York Times*. December 13, 1999.

Shepard, Jeffrey M. *You and the Year 2000: a Practical Guide for Things that Matter*. Loveland: Indigo Ink Publishing, 1998.

Simon, Frank. *The Y2K Bug: A Novel.* Nashville: Broadman & Holman Publishers, 1999.

Sloan, Allan. "Giving Big Blue a Shiner." *Newsweek*. 134(18) (November 1, 1999): 61.

Smith, Anita. *The Millennium Bomb Disposal Kit: Year 2000 Legal & Management Success Strategies.* Canberra: SmithComm, 1998..

Smith, Sandi. *Solving the Year 2000 Dilemma (Second Edition).* New York: American Institute of Certified Public Accountants, Inc., 1998.

Smith, Sherman S. *Lie2K: Why the Alleged End-of-the-World Year-2000 Computer Crisis is Really Just a Hoax.* Charleston: Meister Press, 1999.

Sorkin, Andrew Ross. "In Britain, a campaign to make small businesses aware of the looming computer millennium 'bug'." *The New York Times.* August 10, 1998.

Spragins, Ellyn. "This Love Could Hurt." *Newsweek.* 131(12) (March 23, 1998): 70, 72.

Strackbein, Sally. *Y2K Kitchen.* Reston: Self-published, 1999.

Stein. Joel. "Hey, You in That Bunker, You Can Come Out Now!" *Time Magazine.* 155(1) (January 1, 2000): 54-58.

Steinbach, Tom. *The Y2K Trojan Horse.* White Pine: Times Ten Publishing, 1999.

Stout, David. "Travel Tip for Jan. 1, 2000: Stay Home." *The New York Times*. September 15, 1999.

Strasser, Todd. *Y2K-9: The Dog Who Saved the World.* New York: Scholastic Inc., 1999.

Swab, Rodney. *Year 2000: Countdown to Calamity.* Kearney: Morris Publishing, 1998.

Swartz, Tim. *Millennium Bomb: The Y2K New World Order Conspiracy*. Global Communications: New Brunswick, 1999.

Szuprowicz, Bohdan. *Year 2000:The International Directory of Y2K Conversion Resources*. Charleston: Computer Technology Research Corp., 1998.

Taylor, Chris. "The History and the Hype." *Time Magazine.* 153(2) (January 18, 1999): 72-73.

Thibodeau, Patrick. "Year 2000 a companywide problem." *Computerworld.* 31(41) (October 13, 1997): 40.

_____. "Feds Give Some States Bad Y2K Grades." *Computerworld.* 34(1) (January 3, 2000): 21.

Thomsett, Rob. "The Year 2000 Bug: A Forgotten Lesson." *IEEE Software.* 15(4) (July/August 1998): 91.

Tiggre, Don L. *Y2K: The Millennium Bug.* Princeton: Xlibris Corporation, 1998.

Tomajczyk, S.F. *101 Ways to Survive the Y2K Crisis.* New York: St. Martin's Griffin, 1999.

Ullman, Elen. "The Myth of Order." *Wired Magazine.* 7(4) (April 1999): 126-129, 183-184.

Ulrich, William M., and Hayes, Ian S. *The Year 2000 Software Crisis: Challenge of the Century.*

Upper Saddle River: Prentice Hall PTR, 1997.

_____. *The Year 2000 Software Crisis: The Continuing Challenge*. Upper Saddle River: Prentice Hall PTR, 1998.

Unhelkar, Bhuvan. *After the Y2K Fireworks: Business and Technology Strategies*. Boca Raton: CRC Press, 1999.

United States Senate, Special Committee on Y2K. *The Senate Special Report on Y2k: Investigating the Impact of the Year 2000 Problem.* Nashville: Thomas Nelson: 1999.

Utne, Eric (ed.) *Y2K Citizen's Action Guide.* Minneapolis: Utne Reader books, 1998.

Van Boven, Sarah; Gajilan, Arlyn Tobias; Murr, Andrew; Reno, Jamie; Trent, T. "Heading for the Hills – Fear of the Y2K bug is pushing some to extremes." *Newsweek*. 132(22) (November 30, 1998): 56-58.

Vanelli, Gail, L. *Exploring the Year 2000 Computer Problem: A Comprehensive Layman's Guide.* New York: Spencer Rowe, 1999.

Vankevich, Ned. *Y2K Made Simple: a Natural Health Resource Guide*. Brewster: Paraclete Press, 1999.

Vistica, Gregory L. "I'm Sorry, Sir, But the 20th Century Just Disappeared." *Newsweek.* 129(4) (January 27, 1997): 18.

Von NatHaus, Bernard. *Y2K Money: Your Survival Currency.* Los Angeles: American Financial Press, 1999.

Wald, Matthew L. "F.A.A. to Fix and Replace Aging Computers." *The New York Times.* January 29, 1998.

_____. "F.A.A. Faulted on Fixing Year 2000 Computer Glitch." *The New York Times.* February 4, 1998.

_____. "Leap Day 2000 Might Pose Big Problems for Some Computers' Software." *The New York Times.* February 9, 1998.

_____. "Few Answers on Monster of All Cyberbugs." *The New York Times.* March 19, 1998.

_____. "Wanted: Retired Workers to Fix Year 2000 Problems." *The New York Times.* July 29, 1998.

_____. "Agencies' Progress on Fixing Year 2000 Problem Is Questioned." *The New York Times.* August 9, 1998.

_____. “Big Party. Big Headache?; The aviation industry is making progress on the Y2K problem. But warn your boss that you may get back a little late.” *The New York Times*. December 27, 1998.

_____. “Year 2000 Glitch Won’t Be Disruptive, Utility Operators Say.” *The New York Times*. January 12, 1999.

_____. “Air Traffic Control System Appears to Pass 2000 Test.” *The New York Times*. April 12, 1999.

_____. “Some Local Governments Unprepared for 2000, Report Says.” *The New York Times*. April 22, 1999.

_____. “Report on 2000 Glitch Gives Poor Grades to School.” *The New York Times*. August 5, 1999. https://archive.nytimes.com/www.nytimes.com/library/tech/99/08/biztech/articles/05year.html

_____. “Will Your Millenia Run in the Next Millennium.” *The New York Times*. September 3, 1999.

_____. “28 Utilities Faulted on Year 2000 Readiness.” *The New York Times*. September 8, 1999.

_____. “Year 2000 Preparations Were Costly, Officials Say.” *The New York Times*. December 17, 1999.

Warner, Richard W. “Blue Cross/Blue Shield saves big bucks in Year 2000 project.” *Datamation.* 43(1) (January 1997): 54.

Wallach, Alan. *The Year 2000 Hoax: “Plain English” Guide to the Year 2000 Problem.* East Canaan: Safe Goods, 1998.

Webber, David and Hutchings, Noah. *Computers and the Beast of Revelation.* Shreveport: Huntington House, Inc., 1986.

Webster, Bruce F. *The Y2K Survival Guide: Getting to, Getting Through, and Getting Past the Year 2000 Problem.* Upper Saddle River: Prentice Hill PTR, 1999.

Weeks, Linton. “We Have a Problem.” *The Washington Post.* April 8, 1999.

Weil, Nancy. “U.S. government Y2K grade improves to ‘B-.’” *CNN*. June 17, 1999. http://www.cnn.com/TECH/computing/9906/17/gov.y2k.idg/

Wiles, Richard D. *Judgement Day 2000: How the Coming Worldwide Computer Crash Will Radically Change Your Life.* Shippensburg: Treasure House, 1998.

Wines, Michael. "Lagging on Year 2000 Bug, Russia Starts Major Effort." *The New York Times*. June 23, 1999. A1, A8.

_____. "Reactors Largely Free of Computers." *The New York Times*. June 23, 1999.

Wong, John B. *The Resurrected Body—Y2K and Beyond.* Lanham: The University Press of America, Inc., 2000.

Wright, Richard Thomas and Wellner, Cathryn. *Action Y2K: A GrassRoots guide to Year 2000 and beyond…* Williams Lake: Winter Quarters Press, 1999.

Yardeni, Edward. "A Race Against the Calendar." *The New York Times.* December 7, 1997. Section 3, 13.

Yourdon, Edward. "Ready for the Great IT Moratorium of 1998?" *Computerworld.* 32(3) (January 19, 1998): 86.

_____. "A Tale of Two Futures." *IEEE Software.* 15(1) (January/February 1998): 23-29.

_____. "Where's the Basis for Year 2000 Optimism?" *Computerworld.* 32(7) (February 16, 1998): 68.

_____. "Year 2000 Advice: Plan Now for Testing." *Computerworld*. 32(11) (March 16, 1998): 69.

_____. "Year 2000 Also Involves Noncritical Systems." *Computerworld*. 32(16) (April 20, 1998): 72.

_____. "Fix-On-Failure Is Playing With Fire." *Computerworld*. 32(21) (May 25, 1998): 60.

_____. "Don't Shoot the Year 2000 Lawyers." *Computerworld*. 32(25) (June 22, 1998): 68.

_____. "Simulate to Test How Ready You Are for the Year 2000." *Computerworld*. 32(29) (July 20, 1998): 52.

_____. "We're In Crunch Mode for Year 2000: Here's How to Survive." *Computerworld*. 32(33) (August 17, 1998): 52.

_____. "Sign Up Users and Customers for the Y2K Bug-Buster Corps." *Computerworld*. 32(38) (September 21, 1998): 75.

_____. "What Comes After 1/1/00?" *Computerworld*. 32(42) (October 19, 1998): 89.

_____. "Year 2000 and the Corporate Citizen." *Computerworld*. 32(46) (November 16,

1998): 78.

_____. "The Moral Dimension of Y2K." *Computerworld*. 32(50) (December 14, 1998): 76.

_____. "Now's the time to size up Y2K task." *Computerworld*. 33(3) (January 18, 1999): 45.

_____. "Shape up or ship out." *Computerworld*. 33(7) (February 15, 1999): 49.

_____. "Getting a Y2K edge on the competition." *Computerworld*. 33(11) (March 15, 1999): 52.

_____. "Y2K compliance: Hard lies, soft lies." *Computerworld*. 33(16) (April 19, 1999): 49.

_____. "The right Y2K image." *Computerworld*. 33(20) (May 17, 1999): 45.

_____. "Y2K legislation and you." *Computerworld*. 33(25) (June 21, 1999): 60.

_____. "Strategic Y2K planning." *Computerworld*. 33(29) (July 19, 1999): 46.

_____. "Y2K's nastiest work." *Computerworld*. 33(33) (August 16, 1999): 44.

_____. "Y2K and the employee." *Computerworld*. 33(38) (September 20, 1999): 39.

_____. "Data corruption: the silent Y2K killer." *Computerworld*. 33(42) (October 18, 1999): 44.

_____. "Y2K whistle-blowers." *Computerworld*. 33(46) (November 15, 1999): 62.

_____. "Post-Y2K proactive." *Computerworld*. 33(51) (December 20, 1999): 39.

_____. "IT Departments: Battling the Y2K Backlash." *IEEE Software.* 17(1) (January/February 2000): 100-101.

_____. "Y2K success lessons." *Computerworld*. 34(4) (January 24, 2000): 40.

Yourdon, Edward, and Roskind, Robert A. The Complete Y2K Home Preparation Guide. Upper Saddle River: Prentice Hill PTR, 1999.

Yourdon, Edward, and Yourdon, Jennifer. *Time Bomb 2000*. Upper Saddle River: Prentice Hill PTR, 1997.

Yourdon, Edward, and Yourdon, Jennifer. *Time Bomb 2000 (Revised and Updated)*. Upper Saddle River: Prentice Hill PTR, 1999.

Yourdon, Edward,Yourdon, Jennifer, and Crane, Peter. *The Y2K Financial Survival Guide*. Upper Saddle River: Prentice Hill PTR, 2000.

Yourdon, Edward, and Roskind, Robert A.. *The Complete Y2K Home Preparation Guide*. Upper Saddle River: Prentice Hill PTR, 1999.

Zeller, Tom. "Overview: A Y2K Primer." *The New York Times*. December 27, 1998.

_____. "Answers: What Will Work?" *The New York Times*. December 27, 1998.

_____. "Covering All the Bases." *The New York Times*. November 27, 1999.

Zetlin, Minda. "Much ado about nothing?" *Management Review.* 86(5) (May 1997): 13.

Zielinski, John M. *Surviving Y2K: The Amish Way.* Leavenworth: Amish Heritage Publications, 1999.

Zuckerman, Laurence. "Many Reported Unready To Face Year 2000 Bug." *The New York Times.* September 25, 1997.

_____. "Fear of Computer Glitch Grounds Thousands of Air Travelers." *The New York Times*. January 1, 2000.

Zuckerman, M.J. "Survey: 45% of Y2K Experts Worried." *USA Today.* June 10, 1999. https://usatoday30.usatoday.com/life/cyber/tech/ctf361.htm

Zvegintzov, Nicholas. "The Year 2000 as racket and ruse." *American Programmer.* February 1996.

_____. "A Resource Guide to Year 2000 Tools." *Computer*. 30(3) (March 1997): 58-63.

_____. "Frequently Begged Questions and How to Answer Them." *IEEE Software.* 15(2) (March/April 1998): 93-96.

Conference Proceedings:

Borchgrave, Arnaud de and Belt, Bradley D. (co-chairs). *The Y2K Crisis: A Global Ticking Time Bomb?* Washington, D.C. June 2, 1998. The Center for Strategic and International Studies.

_____. *Y2K Risk Assessment Task Force Public Forum.* Washington, D.C. October 6, 1998. The Center for Strategic and International Studies.

Television and Film

Amiel, Jon, dir. *Entrapment.* 1999; Twentieth Century Fox.

Judge, Mike, dir. *Office Space*. 1999; Twentieth Century Fox.

Lowry, Dick, dir. *Y2K: The Movie.* 1999; NBC Studios.

Pepin, Richard, dir. *Terminal Countdown.* 2000. PM Entertainment Group.

The Simpsons, season 11, episode 4, "Treehouse of Horror X: Life's A Glitch, Then You Die." Twentieth Century Fox. Aired October 31, 1999.

60 Minutes: Y2K (1998). Directed by Steve Kroft. New York, NY: Columbia Broadcasting System, 1998. Aired November 29, 1998.

60 Minutes: Y2K (1999). Directed by Steve Kroft. New York, NY: Columbia Broadcasting System, 1999. Aired May 5, 1999.

60 Minutes: Clinton on the Millennium (Countdown to 2000). Directed By Charlie Rose. New York, NY: Columbia Broadcasting System, 1999. Aired December 22, 1999.

Websites

Year2000.com
Yourdon.com
Gao.gov/y2kr.htm
Y2k.gov
Senate.gov/~y2k/index.html
House.gov/reform/gmit/y2k/index.htm
Wdcy2k.org
Cassandraproject.org
Y2kwomen.com
Josephproject2000.org
Nhne.com
Michaelhyatt.com
Co-intelligence.org/y2k_breakthrough.html

Secondary Sources

Abbate, Janet. *Inventing the Internet*. Cambridge: The MIT Press, 2000.

_____. *Recoding Gender: Women's Changing Participation in Computing*. Cambridge: The MIT Press, 2012.

Abbate, Janet and Dick, Stephanie (eds). *Abstractions and Embodiments: New Histories of Computing and Society.* Baltimore: Johns Hopkins University Press, 2022.

Adas, Michael. *Machines as the Measure of Man: Science, Technology, and Ideologies of Western Dominance*. Ithaca: Cornell University Press, 2014 (1989).

_____. *Dominance by Design: Technological Imperatives and America's Civilizing Mission.* Cambridge: The Belknap Press of Harvard University Press, 2006.

Ames, Morgan. *The Charisma Machine: The Life, Death, and Legacy of One Laptop per Child.* Cambridge: The MIT Press, 2019

Anders, Günther. *Die Antiquiertheit des Menschen 1: Über die Seele im Zeitalter der zweiten industriellen Revolution.* München: Verlag C.H. Beck OHG, 1956.

_____. *Die Antiquiertheit des Menschen 2: Über Zerstörung des Lebens im Zeitalter der dritten industriellen Revolution.* München: Verlag C.H. Beck OHG, 1980.

Appadurai, Arjun, and Alexander, Neta. *Failure*. Cambridge: Polity Press, 2020.

Arendt, Hannah. *The Human Condition.* Chicago: Chicago University Press, 1958.

Aspray, William. *John von Neumann and the Origins of Modern Computing.* Cambridge: The MIT Press, 1990

Barbrook, Richard. *Imaginary Futures: from Thinking Machines to the Global Village.* London: Pluto Press, 2007.

Barkun, Michael. *Disaster and the Millennium.* Syracuse: Syracuse University Press, 1974.

Bashe, Charles, Johnson, Lyle, Palmer, John, and Pugh, Emerson. *IBM's Early Computers*. Cambridge: The MIT Press, 1985.

Bauman, Zygmunt. *Liquid Modernity*. Cambridge: Polity Press, 2000.

Beck, Ulrich. *Risk Society: Towards a New Modernity.* Los Angeles: Sage, 1986.

_____. *World at Risk.* Cambridge: Polity Press, 2009.

Beck, Ulrich; Giddens, Anthony; and Lash, Scott. *Reflexive Modernization: Politics, Tradition and Aesthetics in the Modern Social Order*. Stanford: Stanford University Press, 1994.

Beniger, James R. *The Control Revolution: Technological and Economic Origins of the Information Society*. Cambridge: Harvard University Press, 1986.

Benjamin, Ruha. *Race After Technology.* Cambridge: Polity Press, 2019.

Biel, Steven (ed). *American Disasters.* New York: NYU Press, 2001.

Bijker, Wiebe, Hughes, Thomas, and Pinch, Trevor. *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology (anniversary edition).* Cambridge: The MIT Press, 2012.

Birkland, Thomas A. *After Disaster: Agenda Setting, Public Policy, and Focusing Events*. Washington: Georgetown University Press, 1997.

_____. *Lessons of Disaster: Policy Change After Catastrophic Events*. Washington: Georgetown University Press, 2006.

Bolter, J. David. *Turing's Man: Western Culture in the Computer Age*. Chapel Hill: The University of North Carolina Press, 1984.

Bonneuil, Christophe and Fressoz, Jean-Baptiste. *The Shock of the Anthropocene.* New York: Verso Books, 2017.

Borgman, Christine L. *From Gutenberg to the Global Information Infrastructure: Access to Information in the Networked World.* Cambridge: The MIT Press, 2003.

_____. *Scholarship in the Digital Age: Information, Infrastructure, and the Internet.* Cambridge: The MIT Press, 2010.

Bosch, Torie (ed). *"You Are Not Expected to Understand This." How 26 Lines of Code Changed the World.* Princeton: Princeton University Press, 2022.

Boyer, Paul. *When Time Shall Be No More: Prophecy Belief in Modern American Culture.* Cambridge: Belknap Press of Harvard University, 1992

Brook, James and Boal, Iain (eds). *Resisting the Virtual Life: The Culture and Politics of Information* San Francisco: City Lights, 1995.

Brown, Kate. *Plutopia: Nuclear Families, Atomic Cities, and the Great Soviet and American Plutonium Disasters.* Oxford: Oxford University Press, 2013.

Broussard, Meredith. *Artificial Unintelligence: How Computers Misunderstand the World.* Cambridge: The MIT Press, 2018.

Buhs, Joshua Blu. *Bigfoot: The Life and Times of a Legend.* .Chicago: University of Chicago Press, 2009.

Campbell-Kelly, Martin. *From Airline Reservations to Sonic the Hedgehog: A History of the Software Industry.* Cambridge: the MIT Press, 2003.

Campbell-Kelly, Martin, Aspray, William, Ensmenger, Nathan, and Yost, Jeffrey. *Computer: A History of the Information Machine*. New York: Westview Press, 2014.

Carson, Rachel. *Rachel Carson: Silent Spring & Other Writings on the Environment.* Washington: *Library of America,* 2018.

Castells, Manuel. *The Rise of the Network Society (Second Edition).* Oxford: Wiley-Blackwell, 2010.

_____. *The Power of Identity (Second Edition)*. Oxford: Wiley-Blackwell, 2010.

_____. *End of Millennium (Second Edition)*. Oxford: Wiley-Blackwell, 2010.

Cerulo, Karen. *Never Saw it Coming: Cultural Challenges to Envisioning the Worst*. Chicago: The University of Chicago Press, 2006.

Ceruzzi, Paul. *A History of Modern Computing*. Cambridge: The MIT Press, 2012.

Chun, Wendy Hui Kyong. *Control and Freedom: Power and Paranoia in the Age of Fiber Optics.* Cambridge: the MIT Press, 2006.

_____. *Programmed Visions: Software and Memory*. Cambridge: the MIT Press, 2011.

Clarke, Lee. *Mission Improbable: using Fantasy Documents to Tame Disaster*. Chicago: The University of Chicago Press, 1999.

_____. *Worst Cases: Terror and Catastrophe in the Popular Imagination*. Chicago: The University of Chicago Press, 2005.

Cohn, Julie A. *The Grid: Biography of an American Technology*. Cambridge: The MIT Press, 2017.

Collins, John. *The Apocalyptic Imagination: An Introduction to Jewish Apocalyptic Literature.* Grand Rapids: William B. Eerdmans Publishing Company, 2016

Cortada, James W. *IBM: The Rise and Fall and Reinvention of a Global Icon*. Cambridge: The MIT Press, 2019.

Dauber, Michele Landis. *The Sympathetic State: Disaster Relief and the Origins of the American Welfare State.* Chicago: University of Chicago Press, 2013

Davis, Tracy C. *Stages of Emergency: Cold War Nuclear Civil Defense.* (Durham: Duke

University Press, 2007.

Dorsh, Kate. *Reliable Witnesses, Crackpot Science: UFO Investigations in Cold War America, 1947-1977.* (Publication Number 13808338). Doctoral Dissertation, The University of Pennsylvania, 2019.

Douglas, Mary. *Risk and Blame: Essays in Cultural* Theory. New York: Routledge, 1992.

Douglas, Mary and Wildavsky, Aaron. *Risk and Culture*. Berkeley: The University of California Press, 1982.

Driscoll, Kevin. *The Modem World: A Prehistory of Social Media.* New Haven: Yale University Press, 2022.

Edgerton, David. *The Shock of the Old: Technology and Global History since 1900.* Oxford: Oxford University Press, 2007.

Edwards, Paul. *The Closed World: Computers and the Politics of Discourse in Cold War America*. Cambridge: The MIT Press, 1996.

_____. "Y2K: Millennial Reflections on Computers as Infrastructure." *History and Technology*. 15 (1998): 7-29.

Edwards, Paul N.; Jackson, Steven J.; Bowker, Geoffrey C.; and Knobel, Cory P. *Understanding Infrastructure: Dyanics, Tensions and Design* (Ann Arbor: Deep Blue, 2007)

Ensmenger, Nathan. *The Computer Boys Take Over: Computers, Programmers, and the Politics of Technical Expertise.* Cambridge: The MIT Press, 2010.

_____. "The Environmental History of Computing." *Technology and Culture*. 59(4) (October 2018): St-S33

Erikson, Kai T. *A New Species of Trouble: The Human Experience of Modern Disasters*. New York: W. W. Norton Company, 1994.

Eubanks, Virginia. *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor.* New York: St. Martin's Press 2017.

Ezrahi, Yaron, Mendelsohn, Everett, and Segal, Howard P. (eds.). *Technology, Pessimism, and Postmodernism*. Amherst: University of Massachusetts Press, 1994.

Fernandez, Luke, and Matt, Susan J. *Bored, Lonely, Angry, Stupid: Changing Feelings about Technology from the Telegraph to Twitter*. Cambridge: Harvard University Press, 2019.

Festiner, Leon; Riecken, Henry; and Schachter, Stanley. *When Prophecy Fails: A Social and*

Psychological Study of a Modern Group that Predicted the Destruction of the World. New York: Harper Torchbooks, 1956

Fleming, David. *Surviving the Future: Culture, Carnival and Capital in the Aftermath of the Market Economy*. White River Junction: Chelsea Green Publishing, 2016.

Foster, Gwendolyn Audrey. *Hoarders, Doomsday Preppers, and the Culture of Apocalypse*. New York: Palgrave Macmillan, 2014.

Fromm, Erich. *May Man Prevail? An Inquiry Into the Facts and Fictions of Foreign Policy.* Garden City: Doubleday & Company, Inc., 1961.

_____. *The Revolution of Hope: Toward a Humanized Technology.* New York: Harper & Row, Publihsers, 1968.

Gabrys, Jennifer. *Digital Rubbish: A Natural History of Electronics.* Ann Arbor: University of Michigan Press, 2017

Galloway, Alexander. *Protocol*: *How Control Exists After Decentralization*. Cambridge: the MIT Press, 2004.

Gazzard, Alison. *Now the Chips Are Down: The BBC Micro.* Cambridge: The MIT Press, 2016.

Geismer, Lily. *Don't Blame Us: Suburban Liberals and the Transformation of the Democratic Party.* Princeton: Princeton University Press, 2014.

Ghosh, Amitav. *The Great Derangement: Climate Change and the Unthinkable.* Chicago: The University of Chicago, 2016.

Glendinning, Chellis. "Notes Toward a Neo-Luddite Manifesto." *Utne Reader.* (March/April 1990). Archived at archive.org (https://ia601803.us.archive.org/29/items/the-anarchist-library-full-list-of-pdfs-nov-2020/chellis-glendinning-notes-toward-a-neo-luddite-manifesto.pdf).

Golumbia, David. *The Cultural Logic of Computation*. Cambridge: Harvard University Press, 2009.

Gordin, Michael G. and Ikenberry, G. John (eds). *The Age of Hiroshima.* (Princeton: Princeton University Press, 2020.

Gould, Steven Jay. *Questioning the Millennium: A Rationalist's Guide to a Precisely Arbitrary Countdown (Revised Edition).* New York: Harmony Books, 1999

Greene, Daniel. *The Promise of Access: Technology, Inequality, and the Political Economy of Hope.* Cambridge: The MIT Press, 2021

Grier, David Alan. *When Computers Were Human.* Princeton: Princeton University Press, 2005.

Gross, Mathew Barrett, and Gilles, Mel. *The Last Myth: What the Rise of Apocalyptic Thinking Tells Us About America.* Amherst: Prometheus Books, 2012.

Grosser, George H., Wechsler, Henry, and Greenblatt, Milton (eds). *The Threat of Impending Disaster: Contributions to the Psychology of Stress*. Cambridge: The MIT Press, 1971.

Haigh, Thomas and Ceruzzi, Paul. *A New History of Modern Computing.* Cambridge: The MIT Press, 2021.

Hendry, John. *Innovating for Failure: Government Policy and the Early British Computer Industry.* Cambridge: The MIT Press, 1990

Hewitt, Kenneth (ed). *Interpretations of Calamity*. Boston: Allen and Unwin Inc., 1983.

Heyck, Hunter. *Age of System: Understanding the Development of Modern Social Science.* Baltimore: Johns Hopkins University Press, 2015

Hicks, Mar. *Programmed Inequality: How Britain Discarded Women Technologists and Lost Its Edge in Computing.* Cambridge: The MIT Press, 2017

Hoffman, Susanna and Oliver-Smith, Anthony. *Catastrophe and Culture: The Anthropology of Disaster*. Santa Fe: School of American Research Press, 2002.

Hommels, Anique, Mesman, Jessica, and Bijker, Wiebe E. (eds). *Vulnerability in Technological Cultures: New Directions in Research Governance*. Cambridge: The MIT Press, 2014.

Horn, Eva. *The Future as Catastrophe: Imagining Disaster in the Modern Age.* New York: Columbia University Press, 2018.

Horowitz, Andy. *Katrina: A History, 1915-2015.* Cambridge: Harvard University Press, 2020.

Hu, Tung-Hui. *A Prehistory of the Cloud.* Cambridge: The MIT Press, 2015

Huet, Marie-Helene. *The Culture of Disaster*. Chicago: The University of Chicago Press, 2012.

Hughes, Thomas P. *Networks of Power: Electrification in Western Society, 1880-1930.* Baltimore: The Johns Hopkins University Press, 1983.

_____. *American Genesis: A Century of Invention and Technological Enthusiasm*. New York: Penguin Books, 1989.

Huzar, Eugène. *La Fin Du Monde Par La Science.* Alfortville: Collections Chercheurs D'Ere,

2007.

Irani, Lilly. *Chasing Innovation: Making Entrepreneurial Citizens in Modern India.* (Princeton: Princeton University Press, 2019.

Jaeger, Carlo C., Renn, Ortwin, Rosa, Eugene A. and Webler, Thomas. *Risk, Uncertainty, and Rational Action*. New York: Earthscan, 2001.

Johnston, Sean. *Techno-Fixers: Origins and Implications of Technological Faith.* Montreal: McGill-Queen's University Press, 2020.

Jonas, Hans. *The Imperative of Responsibility: In Search of an Ethics for the Technological Age.* Chicago: The University of Chicago Press, 1984.

Kahin, Brian and Wilson III, Ernest J.(eds). *National Information Infrastructure Initiatives.* Cambridge: The MIT Press, 1996.

Keller, Catherine. *Apocalypse Now and Then: A Feminist Guide to the End of the World.* Minneapolis: Fortress Press, 1996

Kermode, Frank. *The Sense of an Ending: Studies in the Theory of Fiction with a New Epilogue.* Oxford: Oxford University Press, 2000

Kidder, Tracy. *The Soul of a New Machine.* New York: Black Bay Books, 1981

Kierner, Cynthia. *Inventing Disaster: The Culture of Calamity from the Jamestown Colony to the Johnstown Flood.* Chapel Hill: The University of North Carolina Press, 2019.

Kitchin, Rob and Dodge, Martin. *Code/Space: Software and Everyday Life.* Cambridge: The MIT Press, 2011

Kimura, Aya Hirata. *Radiation Brain Moms and Citizen Scientists: The Gender Politics of Food Contamination after Fukushima.* Durham: Duke University Press, 2016.

Kline, Ronald. *The Cybernetics Moment: or Why We Call Our Age the Information Age.* Baltimore: Johns Hopkins University Press, 2015.

Knowles, Scott Gabriel. *The Disaster Experts: Mastering Risk in Modern America*. Philadelphia: The University of Pennsylvania Press, 2011.

_____. "Learning from Disaster? The History of Technology and the Future of Disaster Research." *Technology and Culture.* 55(October 2014): 773-784.

Landauer, Thomas K. *The Trouble with Computers: Usefulness, Usability, and Productivity*. Cambridge: The MIT Press, 1996.

Lewis, Jeff. *Global Media Apocalypse: Pleasure, Violence and the Cultural Imaginings of Doom*. New York: Palgrave Macmillan, 2012.

Light, Jennifer. *From Warfare to Welfare: Defense Intellectuals and Urban Problems in Cold War America.* Baltimore: Johns Hopkins Univeristy Press, 2003.

Lilley, Sasha, McNally, David, Yuen, Eddie, and Davis, James. *Catastrophism: The Apocalyptic Politics of Collapse and Rebirth*. Oakland: PM Press, 2012.

M. Susan Lindee, M. Susan. *Rational Fog: Science and Technology in Modern War.* Cambridge: Harvard University Press, 2020.

Lingel, Jessa. *An Internet for the People: the Politics and Promise of Craigslist.* Princeton: Princeton University Press, 2020.

Luhmann, Niklas. *Risk: a Sociological* Theory. New Brunswick: Aldine Transaction, 2008;

Lupton, Deborah. *Risk*. New York: Routledge Books, 2013.

MacKenzie, Donald. *Mechanizing Proof: Computing, Risk, and Trust*. Cambridge: the MIT Press, 2001.

Maher, Jimmy. *The Future Was Here: The Commodore Amiga.* Cambridge: The MIT Press, 2012.

Mahoney, Michael S. "The Histories of Computing(s)." *Interdisciplinary Science Reviews.* 30(2) (2005): 119-13.

Mailland, Julien and Driscoll, Kevin. *Minitel: Welcome to the Internet.* Cambridge: The MIT Press, 2017.

Manion, Mark and Evan, William M. "The Y2K problem and professional responsibility: a retrospective analysis." *Technology in Society*. 22 (2000), 361-387.

Manovich, Lev. *Software Takes Command*. London: Bloomsbury Academic, 2013.

Marsh, George Perkins. *Man and Nature: Edited, with a New Introduction by David Lowenthal.* Seattle: University of Washington Press, 2003.

Marvin, Carolyn. *When Old Technologies Were New: Thinking About Electric Communication in the Late Nineteenth Century*. Oxford: Oxford University Press, 1988.

Marx, Leo. "Technology: The Emergence of a Hazardous Concept." *Technology and Culture.* 51(3) (July 2010): 561-577.

Matthewman, Steve. *Disasters, Risks and Revelation: Making Sense of Our Times.* New York: Palgrave Macmillan, 2015.

McIlwain, Charlton. *Black Software: The Internet and Racial Justice, form the AfroNet to Black Lives Matter.* Oxford: Oxford University Press, 2020.

McKinney, Cait and Mulvin, Dylan. "Bugs: Rethinking the History of Computing." *Communication, Culture & Critique.* 12(4) (2019): 476-498.

McNeill, J.R. and Engelke, Peter. *The Great Acceleration: An Environmental History of the Anthropocene since 1945.* Cambridge: The Belknap Press of Harvard University Press, 2014.

Medina, Eden. *Cybernetic Revolutionaries: Technology and Politics in Allende's Chile.* Cambridge: The MIT Press, 2011.

Misa, Thomas J.; Brey, Phillip; and Feenberg, Andrew (eds). *Modernity and Technology.* Cambridge: The MIT Press, 2004.

Mody, Cyrus C.M. *The Squares: US Physical and Engineering Scientists in the Long 1970s.* Cambridge: The MIT Press, 2022.

Mohun, Arwen. *Risk: Negotiating Safety in American Society*. Baltimore: The Johns Hopkins University Press, 2013.

Moore, Kelly. *Disrupting Science: Social Movements, American Scientists, and the Politics of the Military, 1945-1975.* Princeton: Princeton University Press.

Moreau, Rene. *The Computer Comes of Age*. Cambridge: The MIT Press, 1985.

Mosco, Vincent. *The Digital Sublime: Myth, Power, and Cyberspace*. Cambridge: the MIT Press, 2005.

Moss, David A. *When All Else Fails: Government as the Ultimate Risk Manager*. Cambridge: Harvard University Press, 2002.

Mullaney, Thomas; Peters, Benjamin; Hicks, Mar; and Philip, Kavita (eds). *Your Computer Is On Fire.* Cambridge: The MIT Press, 2021.

Mulvin, Dylan. "Distributing Liability: The Legal and Political Battles of Y2K." *IEEE Annals of the History of Computing.* 42(3) (July-September, 2020): 26-37.

Mumford, Lewis. Mumford. *In the Name of Sanity.* New York: Harcourt, Brace and Company, 1954.

_____. *The Pentagon of Power.* Vol. 2 of *The Myth of the Machine. Technics and Human Development*. New York: Harvest/Harcourt Brace Jovanovich, 1970.

Murphy, Michelle. 2006. *Sick Building Syndrome and the Problem of Uncertainty: Environmental Politics, Technoscience, and Women Workers*. Durham (NC): Duke University Press.

Nemer, David. *Technology of the Oppressed: Inequality and the Digital Mundane in Favelas of Brazil.* Cambridge: The MIT Press, 2022.

Neumann, Peter G. *Computer Related Risks.* New York: ACM Press, 1995.

Nixon, Rob. *Slow Violence and the Environmentalism of the Poor.* Cambridge: Harvard University Press, 2011.

Noble, David. *America by Design: Science, Technology, and the Rise of Corporate Capitalism*. Oxford: Oxford University Press, 1977.

_____. *The Religion of Technology: The Divinity of Man and the Spirit of Invention.* New York: Penguin Books, 1999.

Noble, Safiya Umoja. *Algorithms of Oppression: How Search Engines Reinforce Racism.* New York: New York University Press, 2018.

Norberg, Arthur and O'Neill, Judy. *Transforming Computer Technology: Information Processing for the Pentagon, 1962-1986*. Baltimore: The Johns Hopkins University Press, 1996.

Nye, David. *American Technological Sublime*. Cambridge: The MIT Press, 1996.

_____. *Seven Sublimes.* Cambridge: The MIT Press, 2022.

Oliver-Smith, Anthony, and Hoffman, Susanna M. (eds). *The Angry Earth: Disaster in Anthropological Perspective*. London: Routledge Books, 1999.

Oreskes, Naomi and Conway, Erik M. *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming.* New York: Bloomsbury Press, 2010.

Orvell, Miles. *Empire of Ruins: American Culture, Photography, and the Spectacle of Destruction.* Oxford: Oxford University Press, 2021.

Parks, Lisa and Starosielski, Nicole. *Signal Traffic: Critical Studies of Media Infrastructures.* Urbana: University of Illinois Press, 2015

Passannante., Gerard. *Catastrophizing: Materialism and the Making of Disaster.* Chicago: University of Chicago Press, 2019

Perrow, Charles. *Normal Accidents: Living with High-Risk Technologies*. Princeton: Princeton University Press, 1999.

_____. *The Next Catastrophe: Reducing Our Vulnerabilities to Natural, Industrial, and Terrorist Disasters*. Princeton: Princeton University Press, 2007.

Perry, Ronald W. and Quarantelli, E.L. (eds). *What is a Disaster? New Answers to Old Questions.* Xlibris, 2005.

Peters, Benjamin. *How Not to Network a Nation: The Uneasy History of the Soviet Internet.* Cambridge: The MIT Press, 2016.

Postman, Neil. *Technopoloy: The Surrender of Culture to Technology.* New York: Vintage Books, 1993.

Priestley, Mark. *A Science of Operations: Machines, Logic, and the Invention of Programming*. London: Springer Books, 2011.

Pugh, Emerson. *Building IBM*. Cambridge: The MIT Press, 1995.

Pugh, Emerson, Lyle, Palmer, and Palmer, John. *IBM's 360 and Early 370 Systems*. Cambridge: The MIT Press, 1991.

Quigley, Kevin F. *Responding to Crises in the Modern Infrastructure: Policy Lessons from Y2K.* New York: Palgrave Macmillan, 2008.

Rankin, Joy Lisi. *A People's History of Computing in the United States*. Cambridge: Harvard University Press, 2018.

Rawlins, Gregory J.E. *Moths to the Flame: The Seductions of Computer Technology*. Cambridge: The MIT Press, 1996.

Redmond, Kent and Smith, Thomas. *From Whirlwind to MITRE.* Cambridge: The MIT Press, 2000.

Remes, Jacob. *Disaster Citizenship: Survivors, Solidarity, and Power in the Progressive Era.* Urbana: University of Illinois Press, 2016.

Remes, Jacob and Horowitz, Andy (eds). *Critical Disaster Studies.* Philadelphia: The University of Pennsylvania Press, 2021.

Rice, Jenny. *Awful Archives: Conspiracy Theory, Rhetoric, and Acts of Evidence.* Columbus: The Ohio State University Press, 2020.

Robbins, Thomas and Palmer, Susan J. (ed). *Millennium, Messiahs, and Mayhem: Contemporary Apocalyptic Movements.* New York: Routledge, 1997

Roberts, Patrick S. *Disasters and the American State: How Politicians, Bureaucrats, and the Public Prepare for the Unexpected.* Cambridge: Cambridge University Press, 2013.

Rochlin, Gene. *Trapped in the Net: The Unanticipated Consequences of Computerization.* Princeton: Princeton University Press, 1997.

Rojas, Raul and Hashagen, Ulf. *The First Computers*. Cambridge: The MIT Press, 2000.

Roland, Alex and Shiman, Philip. *Strategic Computing.* Cambridge: The MIT Press, 2002.

Rose, Kenneth D. *One Nation Underground: The Fallout Shelter in American Culture.* (New York: New York University Press, 2001.

Rozario, Kevin. *The Culture of Calamity: Disaster and the Making of Modern America*. Chicago: University of Chicago Press, 2007.

Sassower, Raphael. *Technoscientific Angst: Ethics and Responsibility.* Minneapolis: The University of Minnesota Press, 1997.

Sauer, Frank. *Atomic Anxiety: Deterrence, Taboo and the Non-Use of Nuclear Weapons.* London: Palgrave Macmillan, 2016.

Segal, Howard P. *Technological Utopianism in American Culture*. Syracuse: Syracuse University Press, 2005.

Sharma, Dinesh C. *The Outsourcer: The Story of India's IT Revolution*. Cambridge: The MIT Press, 2015.

Slayton, Rebecca. *Arguments That Count: Physics, Computing, and Missile Defense, 19149-2012.* Cambridge: The MIT Press, 2013.

Smith, Merritt Roe and Marx, Leo (eds.). *Does Technology Drive History: The Dilemma of Technological Determinism*. Cambridge: the MIT Press, 1994.

Srinivasan, Ramesh. *Whose Global Village: Rethinking How Technology Shapes Our World.* New York: New York University Press, 2017.

Starosielski, Nicole. *The Undersea Network.* Durham: Duke University Press, 2015

Strozier, Charles B. and Flynn, Michael. *The Year 2000: Essays on the End.* New York: New York University Press, 1997.

Sturken, Marita, Thomas, Douglas, and Ball-Rokeach, Sandra (eds). *Technological Visions: The Hopes and Fears that Shape New Technologies*. Philadelphia: Temple University Press, 2004.

Swaine, Michael and Freiberger, Paul. *Fire in the Valley: The Birth and Death of the Personal Computer.* Pragmatic Bookshelf, 2014.

Tenner, Edward. *Why Things Bite Back: Technology and the Revenge of Unintended Consequences.* New York: Knopf Books, 1996.

Tierney, Kathleen. *The Social Roots of Risk: Producing Disasters, Promoting Resilience.* Stanford: Stanford University Press, 2014.

_____. *Disasters: a Sociological Approach*. Cambridge: Polity Press, 2019.

Tierney, Matthew. *Dismantlings: Words Against Technology in the American Long Seventies.* Ithaca: Cornell University Press, 2019.

Thomas, Lindsay. *Training for Catastrophe: Fictions of National Security after 9/11.* Minneapolis: The University of Minnesota Press, 2021.

Tsing, Anna Lowenhaupt. *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins.* Princeton: Princeton University Press, 2015.

Turkle, Sherry. *Life on the Screen: Identity in the Age of the Internet.* New York: A Touchstone Books, 1995.

_____. *The Second Self: Computers and the Human Spirit.* Cambridge: The MIT Press, 2005.

Turner, Fred. *From Cyberculture to Counterculture: Stewart Brand, the Whole Earth Network and the Rise of Digital Utopianism*. Chicago: The University of Chicago Press, 2006.

Ullman, Elen. *Close to the Machine: Technophilia and Its Discontents.* New York: Picador, 1997.

Vallor, Shannon. *Technology and the Virtues: A Philosophical Guide to a Future Worth Wanting.* Oxford: Oxford University Press, 2016.

Vardalas, John. *The Computer Revolution in Canada: Building National Technological Competence, 1945-1980.* Cambridge: The MIT Press, 2001

Vinsel, Lee and Russell, Andrew. *The Innovation Delusion: How Our Obsession with New Has Disrupted the Work That Matters Most.* New York: Currency, 2020.

Virilio, Paul. *Speed and Politics*. Los Angeles: Semiotext(e), 2006.

_____. *Open Sky.* London: Verso Books, 2008.

Vox, Lisa. *Existential Threats: American Apocalyptic Beliefs in the Technological Era.* Philadelphia: The University of Pennsylvania Press, 2017.

Waldrip-Fruin, Noah. *Expressive Programming: Digital Fictions, Computer Games, and Software Studies.* Cambridge: The MIT Press, 2009.

Waldrop, M. Mitchell. *The Dream Machine: J.C.R. Licklider and the Revolution that Made Computing Personal.* New York: Penguin Books, 2001

Wang, Xiaowei. *Blockchain Chicken Farm and Other Stories of Tech in China's Countryside.* New York: FSG Originals x Logic, 2020.

Weart, Spencer R.. *The Rise of Nuclear Fear.* Cambridge: Harvard University Press, 2012.

Weber, Eugen. *Apocalypses: Prophecies, Cults, and Millennial Beliefs through the Ages*. Cambridge: Harvard University Press, 1999.

Weizenbaum, Joseph. *Computer Power and Human Reason: From Judgement to Calculation*. San Francisco: W.H. Freeman and Company, 1976.

_____. "The Paradoxical Role of the Computer." Holst Memorial Lecture 1983. Techische Hogeschool Eindhoven. December 14, 1983.

Wilkes, Maurice. *Memoirs of a Computer Pioneer.* Cambridge: The MIT Press, 1985;

Williams, Rosalind. *The Triumph of Human Empire: Verne, Morris, and Stevenson at the End of the World*. Chicago: The University of Chicago Press, 2013.

_____. "Crisis: The Emergence of Another Hazardous Concept." *Technology and Culture.* 62(2) (April 2021): 521-546.

Winner, Langdon. *Autonomous Technology: Technics-out-of-Control as a Theme in Political Thought*. Cambridge: The MIT Press, 1977.

_____. *The Whale and the Reactor: A Search for Limits in an Age of High Technology*. Chicago: The University of Chicago Press, 1986.

Wisnioski, Matthew. *Engineers for Change: Competing Visions of Technology in 1960s*

America. Cambridge: The MIT Press, 2016.

Wojcik, Daniel. *The End of the World as We Know It: Faith, Fatalism, and Apocalypse in America.* New York: New York University Press, 1997.

Wuthnow, Robert. *Be Very Afraid: The Cultural Response to Terror, Pandemics, Environmental Devastation, Nuclear Annihilation, and Other Threats.* Oxford: Oxford University Press, 2010.

Yost, Jeffrey. *Making IT Work*. Cambridge: The MIT Press, 2017.

Zuboff, Shoshana. *In the Age of the Smart Machine: The Future of Work and Power*. New York: Basic Books, 1988.