

Discourses in the Design of Cultural Artifacts

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Introduction

I am not a scholar of literature but wholeheartedly embrace Mikhail Bakhtin’s (1992)¹ dialogism in my work. However, unlike Bakhtin, my starting point is not written discourse but rather the human use of language in face-to-face communication and what it does (for example, Krippendorff, 1989, 2000)² from which Bakhtin drew much of his inspiration as well. I recognize that we all begin as oral beings. Nevertheless, as soon as we have learned to speak and respond to the articulations of others, we are confronted with strings of characters, instructed to read and write them, and start to think in terms of words, sentences, propositions, letters, and contracts. I am always amazed when reflecting on how much individual and institutional effort it takes for us to become literate members of society and to equate language with writing at the expense of its oral origin. To me, conversation is our primary cultural artifact. The abstract system of language, presumably governed by phonetic and syntactic rules that Saussurean linguists have constructed, is an institutionalized imposition on oral communication. While the benefits of writing are not in doubt, in this paper I am exploring how various social constraints on our primary cultural artifact— not only in the form of texts—generate other interactive artifacts, whether unintended or by design.

¹ Mikhail Bakhtin, *The Dialogic Imagination: Four Essays*. (Austin: University of Texas Press, 1992)

² Klaus Krippendorff, “On the Ethics of Constructing Communication,” in *Rethinking Communication: Paradigm Issues, Vol. I*, ed. B. Dervin, L. Grossberg, B. J. O’Keefe and E. Wartella (Newbury Park, CA: Sage, 1989), 66-96.

² Klaus Krippendorff, “Ecological Narratives: Reclaiming the Voice of Theorized Others,” in *The Art of the Feud; Reconceptualizing International Relations*, ed. J. V. Ciprut (Westport, CT: Praeger Publishers, 2000), 1-26.

Bakhtin proposed a way of reading texts not as a sequence of well-formed sentences conceptualized by structural linguists, or as a network of propositions about the world on which logical positivists insist, but as the voices behind written texts. For Bakhtin, these voices belong not only to their authors, which is the primary focus of many contemporary literary interpretations, but also to those written of, explicitly quoted, and implicitly invoked, the presumed readers. What attracted me to his conceptions is that he always grounded his reading of texts in human speech. Words, he insisted, do not exist until they are spoken, and, when printed, bear the signature of their speakers and listeners without whom we rarely speak. He also recognized that most of what authors write reproduces what they have learned from others. A recent book by two cognitive scientists come to a conclusion, unexpected in the cognitive sciences, that we can never think alone (Sloman & Fernbach, 2017).³ Thus, there are always many voices speaking through a text to readers in particular situations. It follows that texts bring together histories of writing, individual authors, addressees, and the actions that follow from them. It is the latter that has fueled my interest in social constructions (Krippendorff, 1989, 2005)⁴ and design. Let me mention a few more of Bakhtin's concepts that were attractive to me. One is his notion that we cannot see ourselves without the articulations of others. Any self is always interacting with other selves (Bakhtin, 1992; Holquist, 1990; Sampson, 1993; Shotter, 1993).⁵ There is no fixed human nature that philosophers could uncover. As Ludwig Wittgenstein (1958)⁶ taught us, even philosophy consists of language games that philosophers play. Moreover, in opposition to the certainty of dictionary definitions of word meaning and the search for correct interpretations by legal or administrative authorities, Bakhtin insisted that all texts are polyphonic, metaphorically bringing multiple voices into interaction. His polyphonic concept of truth suggests that when two people disagree, it cannot be assumed that one of them must be right. Finally, Bakhtin suggested that all utterances represent distinct points of view. There are no neutral perspectives or positions from which we speak or write. To me, the multiplicity of distinct discourses gives us many positions from which we can proceed.

³ Steven Sloman, and Philip Fernbach, *The Knowledge Illusion; Why We Never Think Alone*. (New York: Riverhead Books, 2017).

⁴ Krippendorff, "On the Ethics of Constructing Communication,"

⁴ Klaus Krippendorff, "The Social Construction of Public Opinion," in *Kommunikation über Kommunikation. Theorie, Methoden und Praxis*. E. Wienand, J. Westerbarkey, and A. Scholl eds. (Wiesbaden, Germany: VS-Verlag, 2005), 129-149.

⁵ Bakhtin, *The Dialogic Imagination: Four Essays*.

⁵ Michael Holquist, *Dialogism; Bakhtin and his World*. (London and New York: Routledge, 1990)

⁵ Edward E. Sampson, *Celebrating the Other; A Dialogic Account of Human Nature*. (Boulder, CO: Westview, 1993)

⁵ John Shotter, *Conversational Realities*. (Thousand Oaks, CA: Sage, 1993).

⁶ Ludwig Wittgenstein, *Philosophical Investigations*, trans. G. E. M. Anscombe (New York: Macmillan, 1958).

So, when we say we talk or write *about* something, we are directing our attention to the world outside language which blinds us to what we are doing in language. As Jürgen Habermas noted, “it makes a difference whether we speak with one another or merely about one another.” (2010:16)⁷ *Aboutness* privileges a representational view of language, a perspective that situates reality outside of us which the later Wittgenstein sought to overcome and I do not want to privilege. To sidestep aboutness, I invite you to read the following not to decide whether I am right or wrong, whether what I am saying is Bakhtinian or not, or whether my assertions are factually correct. My hope is that the distinctions I will be introducing resonate with your experiences, and that they encourage new possibilities of listening, reading, and being in language. In the spirit of dialogue, your response would mean a lot to me. Unfortunately, the medium of writing delays that possibility.

Let me add that I am a designer by background and an occasional participant in larger design projects. However, I spent most of my academic career as a scholar of human communication. For me, designing means developing and planting seeds of innovations that are valued by members of particular communities. By innovations, I mean products, practices, or policies that are not caused by nature. They require human ingenuity. To be clear, I do not think the ability to create innovations is the exclusive province of professional designers. Design is fundamental to being human. Planning one’s career, taking family pictures, or arranging chairs for a meeting, are acts of design, as are creating websites, constructing billboards, building bridges, designing scientific experiments, or developing national policies. However, in various publications (especially Krippendorff, 2006),⁸ I have limited my attention to the professional design of human-centered or culturally sensitive artifacts, that is, of artifacts that people speak of, consider meaningful, and can actually interface with and connect through them with each other. Professional design is distinct from everyday design by being primarily focused on the benefits provided to others. I want to continue that focus here, but wish to distinguish this kind of design, on the one hand, from technology-centered design—engineering or chemistry for example, which pursue technical specifications—and on the other hand, from everyday design, mainly for personal use. Designing in collaboration with experts requires specialized vocabularies to develop ideas into realistic proposals. This vocabulary must also enable designers to communicate, explain, and argue for the value of their developments to those who can realize and ultimately benefit from them. This is the task of a compelling design discourse (Krippendorff, 2006,

⁷ Jürgen Habermas, et al. *An awareness of what is missing*, trans. C. Cronin (Malden, MA: Polity Press, 2010).

⁸ Klaus Krippendorff, *The Semantic Turn; A New Foundation for Design*. (Boca Raton, FL, London, New York: Taylor & Francis CRC Press, 2006).

2009a).⁹

This paper develops the features of a design discourse that enables designers to collaborate on projects, bringing human-centered and culture sensitive artifacts into being. The uniqueness of such a discourse is best demonstrated by comparing it with conversation and a few familiar discourse genres from which it must distinguish itself. Let me sketch the steps by which this paper will proceed:

- Genuine conversation or dialogue
- Some forms of communication into which genuine conversation can erode
- What distinguishes discourses from conversations and from each other
- Discursive practices that tend to become computations
- Meanings of cultural artifacts in the public domain
- Design discourse – ideal and in practice

Genuine Conversation or Dialogue

To me:

- Genuine conversations are *common, mundane, and voluntary occurrences* involving two or more interacting participants. They may happen in the privacy of a home or in public places, between people who find themselves next to each other, among friends or acquaintances but without expectations of a particular outcome.
- Conversations *build on their participants' experiences in prior conversations*, not necessarily with the same individuals. Developmentally, conversations begin with a mother and her baby, making each other laugh. They become more complex in time and involve other participants, but remain just as invigorating.
- Analytically, for outside observers of conversations, the voices of their participants may be traced to previous encounters. However, for the most part, speakers do not know where their words came from, are unaware of echoing anyone in particular, and identify themselves with the vocabulary they call their own. Under these conditions, I consider conversational participants *genuine, articulating the voices they consider their own*.

⁹ Krippendorff, *The Semantic Turn*.

⁹ Klaus Krippendorff, "Discourse as Systematically Constrained Conversation," in his *On Communicating: Otherness, Meaning, and Information*, ed. F. Bermejo (New York: Routledge, 2009a), 217-234.

- Conversations *are self-organizing*. Outsiders do not matter in what happens in genuine interactions. The meanings of the braided histories that emerge in that process, including any rules adopted, are unique to a particular conversation. Triads form, consisting of speakers and their listeners in alternating roles, what was said previously, and how that history is extended by responding to each other with respect.

Being self-organizing implies that outside observers of conversations have no access to the experiences, meanings, and the sense of being able to shape what is happening as a part of one. Observations, recordings, or transcripts of conversations belong to a different experiential domain.

- In genuine conversations, *everything said or done is said or done in the expectation of being held accountable* for it (Shotter, 1984).¹⁰ This mutuality defines the condition of *dialogical equality*. Equality is not measurable in terms of the amount or quality of participants' contribution but rather by whether participants' *understanding becomes coordinated*. In dialogical terms, *understanding is the condition of having no further questions to ask* and dialogical equality manifests itself when all voices are being heard.

To be clear, understanding is a personal matter. Nobody has direct access to anyone else's understanding, nor can anyone claim one's understanding to be shared or in agreement with someone else's. In conversations, it is natural to construct a partner's understanding from what he or she has said. The assurance "I understand" indicates a state of satisfaction with what was heard and a suggestion to go on. Coordinations of this kind manifest *multiple reflexive loops*: We make assumptions regarding how our addressees interpret what we are saying or doing. We create expectations of what would prompt our addressees to hold us accountable for what we were saying or doing. Whether actually asked to offer an account for what we said or did, in the very act of speaking and doing we can hardly avoid anticipating how the account we might give for what we do when requested will be received, hoping that the addressees will accept them as plausible, and so on. Similar reflexive loops could be articulated for the addressees. Genuine conversations flow naturally within such reflexive loops.

- Conversations *are irreversible*. Everything said adds to the joint history as understood in each participant's own terms. What is said cannot be undone, it can only be qualified. For example, a participant may clarify her utterance or apologize for saying something untoward. Accounts of this kind may well alter

¹⁰ John Shotter, *Social Accountability and Selfhood*, (New York: Blackwell, 1984)

the meaning of what was said or done, but they too remain part of the braided history that a conversation is weaving.

- In genuine conversations, participants *provide spaces for each other to respond* and *preserve the possibility of conversations to continue indefinitely* – perhaps after some time, perhaps with different participants, perhaps concerning something else. Interruptions of genuine conversations may happen for reasons of having to do something else, moving to a distant place, or the death of a participant. However, such occurrences may not prevent their continuation at a later time or with others. However, when purposes enter a conversation or a problem to be solved, conclusions tend to define an end point. Such conversations are no longer genuine. Moreover, when conversations turn into physical violence, conversation has ended for good.
- Conversations are *the fastest evolutionary process* I know. Conversations rarely ever repeat themselves. They introduce *variations* in the form of new compositions of known parts, such as of utterances, words, tropes, or narratives. Responses reveal the merits of what was said, being either *selectively developed* to the point of *common satisfaction*, or left dormant in favor of something else to emerge. In conversations, compositions draw on many more units than biological evolution – mutations and selections – can. And the survival of ideas in conversations is almost instantaneously evident and involves all participants – unlike in biological processes, where mating involves two organisms and the viability of their offspring may require years to be evident. According to Joshua Wolf Shenk (2014),¹¹ virtually all innovations, whether in science, technology, literature, or the arts, are due to engaging in conversations with someone else, even with virtual others.
- Conversations may create artifacts. The braided histories of interactions, experienced and referred to, disappear with the death of their participants. But conversations may also compel their participants to act outside conversations, leaving physical traces behind that may well last beyond the lifespan of the actors and cannot be explained without their engagement in particular conversations.

Some Forms of Communication into Which Genuine Conversation Can Erode

¹¹ Joshua Wolf Shenk, *Powers of Two: Finding the Essence of Innovation in Creative Pairs*, (Boston, MA: Houghton Mifflin Harcourt, 2014).

Martin Buber observed that ideal dialogue is empirically rare. We experience *dialogical moments* at which we find ourselves in unconstrained commonality with others (Cissna & Anderson, 2002)¹² and converse freely; what emerges enriches all of its participants.

Why would one bother to conceptualize something that is only rarely experienced? I contend that it is never easy to understand what it is to be human until experiencing something missing. For example, conditions such as the feeling of being unable to say what is on one's minds for fear of getting into trouble, being asked to follow rules that do not make sense, or being dismissed as incompetent or insignificant, deviate from the unencumbered flow of genuine conversations and call for explanations of what is going on there. In such situations, authentic conversation serves as the unwritten standard against which current communication situations are distinguished, evaluated, and given a name, whether accepted as such or questioned and renegotiated. Ideal dialogue or genuine conversations can be conceived as one endpoint of a continuum from which practical communication situations systematically deviate. It is the experience of constraints that transform genuine conversations into other forms of communication (Krippendorff, 2009b),¹³ not just dialogue into monologue.

The most obvious intrusion into genuine conversations may well be due to relying on media of communication. Telephone conversations lack visual cues, smells, and touch expected in face-to face encounters but they are still interactive and called conversations. When more than two people are involved, say in conference calls, the absence of eye contact and gestures makes turn-taking exceedingly difficult and imposes additional constraints on conversations. Letter writers can employ typographical conventions – punctuating, quoting, underlining, bolding, or using emoji – but they do not substitute for eye contact, gestures, sound, and emotional expressions. Writing letters furthermore delays responses from their addresses. Published literature is almost completely removed from participating in genuine conversation by the uncertainty of who will read it, when, how, and why, whether a response ever reaches its author and whether the author changes what was written. The voices that Bakhtin conceptualized are metaphorical constructions resulting from his imaginative interpretations of texts. They are not actually heard and cannot be literally interacted with.

Beyond medial constraints, we also are familiar with debates, expected to distinguish winners from losers, job interviews, lectures or instructions, verdicts read in court, or declarations of war. They exemplify dialogical inequalities that are irreconcilable with genuine conversations. However, such speech acts or genres are

¹² Kenneth N. Cissna, and Rob Anderson, *Moments of Meeting: Buber, Rogers, and the Potential for Public Dialogue*. (Albany, NY: SUNY Press, 2002).

¹³ Krippendorff, *Discourse as Systematically Constrained Conversation*.

mere parts of other characteristics that permit genuine conversations to erode into something else. Let me mention just four ways.

First, individuals may choose not to speak for themselves but as members of a community, occupants of an office, as experts on a subject matter, in the name of absent others, or as designated leaders. Introducing absent, fictional, or abstract others into conversations transforms them into games of unequal representatives, invoking seemingly unquestionable authorities. Such games are no longer self-organizing as the absent outsiders speak through one or more participants who cannot be held accountable for what is said on their behalf. François Coren (2014)¹⁴ speaks of ventriloquism in which the speaker hides behind the voices of absent others. Addressees do not really know who or what generates the ventriloquized voices, how real they are, or how to negotiate with them.

Second, interactions between customers and sales personnel, between therapists and their clients, or between professors and their students, are not between individuals but between the institutional roles they play, reducing accountability to the categories performed.

Third, many social communications are purposive. When people come together to achieve a goal, only relevant contributions count. In job interviews, candidates are expected to prove their qualifications. Interviewers speak for the employer and test the candidates' stories against criteria rarely revealed to the candidate. Board meetings are primed to come to decisions. Their social structures surface in who is allowed to speak, deemed worth listening to, and has the right to articulate the concluding decision, binding for all members. There is no point for purposive deliberations to continue beyond achieving their goal. It is not impossible, of course, for dialogical moments to occur even in highly structured situations, among co-workers, in mentor-student consultations, or during psychotherapy, but these are not only rare occurrences but also irrelevant to achieving the goal that brought these people to talk to one another.

Fourth, some discourse analysts, prominently Michael Foucault (1972),¹⁵ invoke physical metaphors of power to explain what fuels discursive actions in society. I side with Gregory Bateson (1972)¹⁶ who insisted that the use of physical metaphors in explanations of social interactions is misguided. Disagreeing with Foucault, I am suggesting that dialogical inequalities rarely arise from unequal command of physical powers, but from submission, the unwillingness to question those who claim to speak from the position of authority. Admittedly, holding authorities accountable for what they

¹⁴ François Coren, *Action and Agency in Dialogue: Passion, Incarnation, and Ventriloquism*, (Amsterdam: John Benjamins, 2014)

¹⁵ Michael Foucault, *The Archeology of Knowledge*, trans. A.M.S. Sheridan, (New York: Pantheon Books, 1972).

¹⁶ Gregory Bateson, *Steps to an Ecology of Mind*. (Chicago, IL: University of Chicago Press, 1972).

say or do may not be easy, especially when they refuse to be held accountable for actions by those affected, which is the complement of submission. Clearly, authorities and social hierarchies of superiorities and subordinations are constructed and enacted in language not explainable by the laws of physics. Similarly troublesome is Bruno Latour's (2005)¹⁷ unwillingness to distinguish between linguistically evident human agency and physical forces. To be clear, I do take material considerations seriously (Krippendorff, 2011),¹⁸ whether in the form of the above-mentioned constraints by media of communication, legal imprisonment, or violence. The mechanical properties of all artifacts undoubtedly constrain some human abilities while extending others but they are neither actors nor drivers. Physical explanations are indifferent to language. For example, everything that happens before the trigger of a loaded weapon is pulled is social. It involves alternatives, is embedded in communications, and is open to conversations – at least ideally. Once a bullet has left the weapon, causality governs its trajectory and no argument can change its course (Krippendorff, 1995).¹⁹ Physical explanations may well enter human interactions after language has run its course.

The above examples suggest that the experience of constraints on genuine conversations generate numerous forms of human communication whose decreasing dialogical freedom suggests a continuum, on which one can also locate discourses. That freedom may become constrained beyond discourse, up to the point at which routine and repetitious interactions become replaceable by mechanisms and computational algorithms, including violence. The reality of computations is always designed, that is, of human origin, but its characteristics are unlike human interaction. On this continuum, computational mechanisms can be considered the extreme opposite of genuine conversation, as depicted in Figure 1.

Genuine Conversation → Communication → Discourse → Computation

Figure 1

What Distinguishes Discourses from Conversations and from Each Other?

Let me move along the continuum in Figure 1, defining discourse and illustrating its definition with three of its genres. To avoid confusion, I deviate from the most common dictionary definitions of discourse that equate it with a body of writing. This is also

¹⁷ Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory*, (New York: Oxford University Press, 2005).

¹⁸ Klaus Krippendorff, "Discourse and the Materiality of its Artifacts," in *Matters of Communication: Political, Cultural, and Technological Challenges to Communication Theorizing*, ed. T. R. Kuhn, (New York: Hampton Press, 2011), 23-46.

¹⁹ Klaus Krippendorff, "Undoing Power," *Critical Studies in Mass Communication* 12, no. 2 (1995): 101-132.

Foucault's starting definition. I am pursuing a more inclusive conception, however, briefly defined as *the social use of language in talk, text, communication, action, and what they produce or leave behind*. To start, all of the well-known discourses – legal, medical, religious, mathematical – involve larger communities, can be practiced across different natural languages, but are incommensurate relative to each other. For example, mathematicians speak a language that lawyers have no reason to understand. Indian computer programmers can communicate more easily with American or Russian computer programmers than with, say, sociologists. The legal discourse has nothing to do with the discourse of geologists, astronomers, physicists, politicians, and medical professionals. Incommensurability distinguishes among these, unlike discourse genres. Moreover, discourses exist only when practiced. Individual members of discourse communities are never permanently engaged as members. They sleep or engage in private matter. People can move through different discourses provided they have the competence to cross their boundaries. So, when statisticians see a psychotherapist, they enter that therapist's discourse as clients. When students demonstrate for political change, they play a role in the public discourse. With this rough sketch, let me spell out the dimensions that I believe all discourses have in common (Krippendorff, 2009a),²⁰ some more decisively than others.

Discourses

- Manifest themselves materially in a body of **discourse-specific artifacts** they characteristically produce and attend to. Artifacts may consist of texts, objects, theories, social practices, technologies, and physical structures – everything that remains after their participants have left.
- Are **kept alive by a discourse community** whose members use specialized vocabularies that give them a sense of understanding each other, are able to work together, attend to their body of artifacts, and manage their communities as participants.
- **Institutionalize recurrent practices**, for instance, by ensuring the correct use of their vocabularies, whether in the form of official dictionaries or publication style manuals, requiring references to canonical texts, standardizing methods for inquiry into, constructing and evaluating their artifacts. Discourses may support journals that regularly inform members of their discourse community of relevant developments. There are educational tracks, certifications, presentations, titles and offices that preserve the stability and coherence of a discourse, generally beyond the lifespan of their contributors.

²⁰ Krippendorff, Discourse as Systematically Constrained Conversation.

- **Maintain their own boundaries** within which they organize themselves. The boundary of a discourse distinguishes between what, who, or when something or someone belongs and what, who, or when someone or something does not. Strong discourses draw their own boundaries from within and protect them from being invaded by alien discourses.
- **Justify themselves** (the artifacts produced, the methods used to create them, and how members are recruited to their discourse communities) **to their stakeholders**. Successful justifications assure access to the needed financial, material, and human resources that preserve the reputation of a discourse and its continuation within their boundary.
- **Are constituted intermittently** as their contributors (members of discourse communities) are able to cross discursive boundaries within the institutionalized constraints imposed by the discourses entered.

This conception of discourse extends Bakhtinian speech genres (1986)²¹ by adding considerations of the discourse communities that practice them, the institutions that uphold them, and the realities they bring forth within self-maintained boundaries (not imposed by outside observers). Discourses could also be characterized as the social enactment of articulated knowledge within particular communities, not merely what is published. Let me illustrate the above dimensions by means of three familiar but very unlike genres: the discourse of literary scholarship, the discourse of the natural sciences, and public discourse.

The discourse of literary scholarship.

The definition of literature has been debated for ages and remains dynamic for good reasons. Etymologically, it concerns texts of enduring significance. This characterization invokes qualities that distinguish literature from ordinary writing, for example, from journalistic accounts, business communications, or everyday prose. In their extremes, these qualities are obvious: poetry stands out for its aesthetic and rhythmic qualities, mythologies for narrating basic human tragedies, and novels for enabling contemporary readers to understand today's experiences. Objective identification of the formal features of literary qualities in written texts is difficult, ultimately impossible—not only because ordinary use of language, from which it needs to deviate, is constantly shifting, but also because texts have no meanings without their readers who cannot escape living in the present of an ever-changing culture, and not in its past nor in its future. One needs

²¹ Mikhail Bakhtin, *Speech Genres and Other Late Essays*, eds. C. Emerson and M. Holquist, trans. V. W. McGee, (Austin, TX: University of Texas Press, 1986).

to be reminded that the linguistic forms of avant-garde poetry often become common language in future iterations.

Texts have physicality. They last as long as the medium that bears its marks endures. But literature is not a physical phenomenon. It is what scholars of literature decide to celebrate and study. Among all the texts that a society generates, the community of literary scholars selects those worthy of their interpretations as literature, texts they understand as having qualities they consensually value. There are of course different schools of literary scholarship, the community of Bakhtin scholars being one. Bakhtin's way of reading literature was and still is revolutionary, an innovation that spread through this scholarly community and created a rich vocabulary centered on voices, new distinctions among speech genres, interpretations, analyses, and critiques, but not for all literary scholars. Literature does not equal textual materiality, it needs to be read and spoken of. By all measures, the body of literature of interest to literary scholarship is created. It consists of discourse-specific artifacts, acknowledging different schools.

Literary scholars not only know each other as members of their discourse community by their use of a shared vocabulary of literary terms, they also maintain their institutions: archives of canonical texts; regular conferences where methods of analysis and text interpretations are debated, legitimized or dismissed; regularly published journals that feature scholarly contributions and exemplify the ethical standards of literary scholarship; and places of instruction, for examples at universities. In universities and at meetings of literary scholars, discursive boundaries are drawn and defended against possible incursions by opposing schools and disciplines that do not belong. Within these boundaries the discourse of literary scholarship is self-organizing. Readership surveys, sales figures, copyright considerations, content analyses, or governmental decrees do not matter to literary scholarship and are in fact viewed as belonging to other discourses.

Literary scholarship has to justify itself, if only to encourage popular celebration of its works and attract new members to its discourse community, a requirement for the discourse to remain viable and insure the flow of funds that maintain its institutions, as well as to create influential connoisseurs among readers on whom its reputation depends. Without compelling justifications for the discourse of literary scholarship, it is unlikely to survive.

Scientific discourse

Scientific discourse is far more structured, institutionalized, and established in society than any discourse of the humanities. The body of its artifacts—of physics, for example—consists of causal theories of a consistent universe. These artifacts are intrinsically linked to the instruments that scientists have developed and institutionalized to generate and test data in support of their theories. They also include the material structures in which science is practiced. It is important to note that, committed to construct a causally determined universe exclusive of other explanations; physicists are unwilling if not unable to acknowledge their own role in creating the artifacts they leave behind for future physicists to build on. Apparently, physicists see no problem in claiming to *collect* their data – as if the data predated their interest in them – *find* theories that *underlie* them – as if these theories would govern an unobserved reality – and consequently call what they *discover* “laws of nature.”

Obviously, without the creative effort of the increasingly capable community of physicists, the theories and models of the field would not exist. They are artifacts by all definitions, as are the instruments that are constructed to generate data in support of particular theories.

Physics is institutionalized, for example, by requiring researchers to go through established curricula, earn academic degrees as a condition for membership in their discourse community, uphold the ontological commitments of their discourse, rely on mathematical accounts (which are intrinsically biased in favor of causal and deterministic formulations), use standardized experimental methods, participate in recurrent scientific meeting, read peer-reviewed publications, and work at universities where physics is taught and in labs where it is practiced.

The boundary of physics excludes practical, applied, social, and especially spiritual discourses (from which physics extricated itself during the Enlightenment). Its boundary is well defined. No outsider would be allowed to define what physics is, dares to challenge the qualifications of physicists, or question the validity of their theoretical contributions to its discourse.

While essentially self-organizing and closed as far as the practices of physicists are concerned, even physics needs to justify itself to those it relies on. Its stakeholders include such applied disciplines as engineering, architecture, computer science, and space travel, as well as funding agencies, all of which need to find value in the artifacts that physics produces. The human resources needed to replenish the discourse community of physicists tends to be created by several layers of popularizations of its accomplishments, ranging from popular science magazines, introductory texts for primary education, science fairs in high schools, science fiction, up to and including serious textbooks.

Public discourse

Public discourse embraces everything that could be of concern for any number of people and be spoken of in public, that is, under the watchful eye of bystanders. It takes place in the public sphere (Habermas, 1992).²² Unlike the two scholarly discourses discussed above, the public sphere is open, ideally to everyone who can speak a shared language and has the common good in mind.

Public discourse is practiced in small face-to-face encounters: sidewalk cafés, public celebrations, big sports events, political demonstrations, and revolutions. It is fueled by popular literature and news. It goes beyond the slogan on the banner of the *New York Times* promising “All the News That’s Fit to Print” by including everything worth talking of in public: art, music, poetry, gossip, scandals, carnival, and celebrities, but also public transportation, popular movies, the use of new media, city planning, and problems to be solved, whether evident to everyone, opined by some, merely rumored, or opposed. The artifacts of public discourse could be characterized as the public infrastructure of society, not to be confused with its technological base. Cars, for example, are designed by engineers, but their shapes respond to how people speak of them, who drives them, and the use to which they are put. The internet is a computational network but what it contains and how it is used is very much determined how people interact with and talk of it, whether as users, critics, or curious observers. Open spaces have material dimensions but become public spaces when people feel invited to gather there. The materiality of public artifacts persists when their users do not attend to them or move away. Anthropologists rely on their durability when trying to reconstruct an extinct culture, albeit in anthropological terms. Museums select from them what they interpret as relevant to contemporary publics.

Its discourse community—or the public for short—organizes itself not just around the public handling of cultural artifacts, but also by dividing itself into neighborhoods, interest groups, ethnicities, generations, and political parties, and by places of where people can meet or follow particular celebrities. This is to say that the public is far from homogeneous, which is why the term public is often referred to in plural.

Public discourse nourishes numerous institutions, starting with regularly published newspapers, the regular release of new movies, the availability of communication networks, public parks for people to gather, police that maintain public order, commercial businesses, public services, and administrative offices open to

²² Jürgen Habermas, *The Structural Transformation of the Public Sphere: An Inquiry into a Category of Bourgeois Society*, transl. Thomas Burger and Lawrence Frederick, (Cambridge MA: MIT Press, 1992).

everyone, scheduled sports events, public ceremonies, voting places, and much more. They all follow rules—some regulated by law, others commonly understood.

Public discourse draws its boundaries by distinguishing itself—on the one hand, from private matter, and on the other hand, from professional discourses whose vocabularies are not widely shared or mastered. However, this boundary is often breached; for example, when oversimplifications of expert discourses fuel public opinion, turning established ecological, economic, and sociological facts into contentious issues, or when the private affairs of celebrities are dug up by journalists and published. Public discourse is vulnerable to strategic misinformation, libel, copyright violations, constraints on participation (for example, voting restrictions), economic interest in public opinion and commercial information (for example, paid political advertisements, sponsored sites on Google, and revenues of newspapers tied to advertisement), cultural barriers to equal access of public artifacts (for example, the digital divide between rich and poor and different ethnicities), as well as governmental censorship.

Public discourse justifies itself as foundational to inclusive democratic governments. It may not be recognized in authoritarian societies and curbed by totalitarian regimes, which regard it as having the potential to undermine existing conditions at opportune moments.

Regarding the last of the six-point definition of discourse, it is important to note again that discourses are neither continuously active nor can they imprison their contributors. They are alive only when and where they are practiced. Some discourses remain dormant for periods of time and are revived when situations call for them. Today, people acquire many more discursive competencies than in past centuries where discursive mobility was far more restricted.

Recurrent Discursive Practices Tend to End in Computations

The institutionalization of its recurrent practices is probably the one dimension of discourse that deviates most profoundly from conversations. Institutions manifest themselves in persistent social structures and established interactions that are habitually performed. In effect, institutions are the core framework of a discourse. Adherence to them maintained its stability and ensure its coherence beyond the lifespan of its human contributors. Peter Berger and Thomas Luckmann (1966)²³ observed that institutions are inter-generationally transmitted without reference to their origins and the problems they were meant to solve. With their histories no longer accessible, institutions become objectified, inter-subjectively verifiably real, taken for granted, formalized, and standardized. They become norms. For example, just as physics is

²³ Peter I. Berger, and Thomas Luckmann, *The Social Construction of Reality: A Treatise on the Sociology of Knowledge*. (Garden City NY: Doubleday, 1966).

practiced in unambiguous terms and relies on depersonalized methodological standards, so are business practices in the public sphere regulated with deviations pursued in court. Institutions exist whenever members of a discourse community expect all other members to practice them. Acknowledging this reflexivity, Nelson Phillips and Cynthia Hardy (2002)²⁴ take institutions to be “self-policing,” that is, when some members of a discourse community step out of line, other members make sure this incurs costs.

Sociologists’ equation of institutions with social mechanisms or formal structures turns out to be not merely metaphorical. Recurrent and mindlessly executed discursive practices are the obvious candidates for substitution by computational mechanisms. For example, we use traffic signs at street intersections in place of police officers to regulate cross-traffic flow. For quite some time now, workers on assembly lines have been replaced by robots. The routine part of the work of bookkeeping has been transformed from notes on paper and manual calculations to electronic banking systems. Much of today’s e-commerce requires human oversight beyond troubleshooting. Search engines scan huge textual databases at an incredibly fast rate, but mainly via character recognition, which is the most routine and unconscious ability human readers have acquired. Ultrafast computer processes include trading on the stock market, automatic surveillance, driverless cars, and unmanned warfare. Smartphone applications also replace routine and recursive human practices.

Computational substitutes for institutional practices tend to emerge from the language used to describe in near-causal terms what they replace. Once a practice is completely codified and routinely enacted, it can easily be written in computer code. This gives rise to devices that are increasingly incomprehensible to those who interface with them, largely because hardware and software designers rely on discourses that escape most ordinary users’ comprehension. To bridge this gap, interface designers try to make use of metaphors derived from the practices they replaced. For example, opening a document, filing it in a folder, and dragging it into a trashcan are useful metaphors from the paper world that have nothing to do, however, with what a computer does. Delegating institutional practices to computational mechanisms calls on their users to invest a considerable amount of trust in the metaphors, which inform their interfaces with them.

Not only are computational mechanisms difficult to understand—even with the help of the discourse whose institutionalized practices they replace—trust in them may have unanticipated consequences. On the positive side, they speed up or amplify the production of its discursive artifacts. On the negative side, unintended consequences can

²⁴ Nelson Phillips and Cynthia Hardy, *Discourse Analysis; Investigating Processes of Social Construction*. Qualitative Research Methods Volume 50. (Thousand Oaks, CA: Sage, 2002).

create externalities that its discourse community is ill equipped to handle, such as the instabilities that high-speed computer trading introduced in the stock market. The inability of a discourse to keep up with what the computational substitutions of its institutional practices set in motion is a defining problem of contemporary society. Whether it is called information society or the cybernetic age, replacing institutions by computational devices creates opportunities never before envisioned by the also unanticipated and seriously problematic instabilities and limitations.

Meanings of Cultural Artifacts in the Public Domain

Cultural artifacts are populating the public sphere as soon as people speak of them, perform with them in the presence of others, and judge their use and their users. One prerequisite of exhibiting these qualities is that they mean something to those who articulate a stake in them.

Regarding texts, this is obvious. Meanings are not literally contained in them. They are institutionalized attributes that emerge in the process of reading. Without having learned to read, arrangements of characters mean little to nothing. Moreover, without the ability to discuss these meanings there would be no way to assure that texts could communicate anything, coordinate interpersonal understanding, and enable collective actions. Discussing texts forms communities of readers and is a prerequisite for any functioning literary society. This is why cultural artifacts reside not only in the privacy of subjective meaningfulness but also in the public sphere.

However, the meanings of tools, furniture, mechanical devices, advertisements, exhibits, and services add an additional dimension. They are verifiable, at least in principle, by what they suggest can be performed with them. Something called a car not only needs to look like one for those who know what cars are, it also is expected to be drivable. A church not only needs to be recognizable as such but also provide a space for people to worship. What is referred to as a chair needs to enable someone to sit on it or it fails the common understanding of a chair. Moreover, advertisements that promise merchandise to have certain qualities need to live up to these promises. The possibility of deception notwithstanding, how something is perceived and what it means needs to be consistent with the experiences it promises when enacting its meanings.

All cultural artifacts can afford a multiplicity of meanings. Besides sitting, a chair may be used to step up on it, keep something handy, change the diaper of a baby, display the wealth of its owner, or fetch a price in a furniture store. Alternative uses tend to be context dependent. On a construction site, a brick becomes part of a wall. In a garden, a brick could confine a flower beet. In a living room, it may serve as a bookend. During a violent encounter, it may become a deadly weapon. Virtually all cultural artifacts promise multiple uses. This multiplicity is loosely related to Bakhtin's conception of

polyphony. However, it would be hard to imagine that usable artifacts have voices, as Bakhtin's metaphor encourages us to read texts. Human interfaces with artifacts offer humans context-dependent choices of how to interact with them and their world. Typically, *interfaces are prolonged by intrinsically or extrinsically motivated interactions*, that is, actions followed by responses, followed by responses to these responses, and so on. Intrinsic motivation manifests itself in emotional involvement for its own sake; extrinsic motivation refers to the achievement of goals. Designers speak of artifacts as possessing *affordances* (Gibson, 1979:127-135),²⁵ defined as *the range of the human interfaces they are able to support*. Whether their meanings appear visually obvious, are recognizable only in certain contexts, are contained in written user instructions, or emerge in conversations with others, whatever their source, the interfaces they inform always are *either afforded by the artifact or cause breakdowns* in Martin Heidegger's sense (Dreyfus, 1992: 70-83).²⁶ What breaks down, however, is not the artifact – although this could happen as well – but how users enact the meanings they attribute to them.

Speaking publicly of artifacts can profoundly affect their meanings. There are many examples where perfectly functional artifacts failed to be useful because of the circulation of stories that made them appear inefficient, unhealthy, or dangerous. Novel artifacts need to be designed together with stories that invite users to try them out and not lead to breakdowns.

Enacting the meanings of cultural artifacts into interfaces bears some resemblance with conversation and dialogue. Computers, for example, offer their users numerous options to act and then display their consequences on a screen. Because computers are context-free and deterministic devices, they cannot comprehend as humans do. For their users, the meanings of the computer icons reveal themselves in what happens after clicking on them, much as the meanings of utterances in conversations depend on the responses they elicit.

Another commonality concerns the principal inaccessibility of the internal makeup what one interacts with. As already mentioned, computer users tend to have no clue of what is going on inside the machine they are working with. The design of its architecture is technology-centered and involves a sophisticated discourse that ordinary users tend not to understand and do not care to become familiar with, as long as they can interface with it. This is analogous to our principal inability to observe what is going on inside someone else's mind. Although we can ask partners in conversations how they understood what we were saying, this, however, does not reveal anything about the

²⁵ James Gibson, *The Ecological Approach to Visual Perception*, (Boston MA: Houghton Mifflin, 1979).

²⁶ Hubert L. Dreyfus, *Being in the World; A commentary on Heidegger's 'Being and Time,' Division 1*. (Cambridge, MA: MIT Press, 1992).

neuronal processes in their brains. The fact that talking of what one understands stays entirely within public discourse reveals the irrelevance of cognitive explanations. The models we speak of when interacting with computers lead us to expectations of what they will do. The models we entertain when interacting with fellow human beings include not just expectations of how they react to what we say but also how they respond in view of how they conceive of us, what they expect we do in response to their response.

The meanings we construct in interaction with artifacts do not have to be that reflexive – just as natural scientists have no reason to presume that their objects of attention have a clue as to how they are observed. However, in communication with fellow human beings, multiple reflexive loops are inevitably involved. Social scientists who wish to understand and designers who wish to intervene in how humans interact with each other through the cultural artifact at their disposal can no longer rely on a representational or monological conception of meanings. Instead, they are encouraged to employ a dialogical conception of how they participate in what they wish to understand or change.

Design Discourse—as an Ideal and In Practice

In the introduction, I characterized designing as developing and planting the seeds of innovations in receptive communities. Biological evolution notwithstanding, design does not develop accidentally or causally. Innovation by design is antithetical to causality. It requires deliberate, ingenious, and coordinate human actions. Cities, cars, furniture, and art objects do not spring forth as trees do from seeds, they emerge in prolonged translations of discourses into institutionally coordinated actions by communities. The reference to communities highlights the cultural ground and the reference to institutionally-coordinated actions highlights the social organizations through which designed artifacts may come to fruition. Inasmuch as design is for the benefit of others, I suggested that design process must be guided by a design discourse, a vocabulary and language that enables designers to develop their designs, proposals, or plans, and to compellingly argue for the value of realizing or using their designs by those who can be enrolled in their projected.

I should mention that attention to what discourses do is not encouraged by the common conception of language and knowledge, taught in schools and provided by the sciences. The lack of awareness that language, when performed, produces something besides its own usefulness has a long history. Since the Enlightenment, scientific discourses have been committed to an understanding of the world as it exists. Scientific theories describe and explain the world in third-person terms, linguistically and normatively excluding the observing theorists for fear of introducing so-called observer

biases. If designers aim to introduce innovations, propose artifacts without precedent, which could not have been observed previously and could not have provided the benefits they hold in their womb, designers cannot rely on a discourse concerned with theorizing observational data. Their discourse cannot be held hostage to the logic, truth claims, and generalizations from the past, least of all on the conception of a nature that excludes scientific observers' interest in them, or ontology for short. While natural scientists are correct in claiming that their theories are predictive beyond available data, their predictions assume, however, that the patterns their theories generalize from past observations continue to hold in the future independent of human agency. Natural scientific theories have no place for human innovations. A commitment to causal conceptions of reality would make the design profession irrelevant.

Starting in 1964, Horst Rittel argued for the distinction between scientists who construct their universe by excluding features external to their discourses and designers who cannot afford such restrictions when innovation is their aim (Protzen & Harris, 2010: 48-52).²⁷ In his "*The Sciences of the Artificial*," Herbert Simon (1969: 58-62)²⁸ suggested that the logic of design is declarative or deontic, not descriptive. For him, design is concerned with what should be rather than what is. I do not consider that his formulation goes far enough, since Simon modeled his conception of design largely on the development of technology or systems that ignored how humans interfaced with them. Interestingly, Rittel and Simon's distinguishing between scientific knowledge and the world of designers has a rarely cited history: In opposition to René Descartes's insistence that true knowledge can only be obtained through observation, the eighteenth-century Italian political philosopher Giambattista Vico argued convincingly that humans know best what they have made and not what is. His *verum factum* principle states "truth resides in being made." It informed his seminal work, *Scienza nuova* ("New Science"; Vico, 1744/1968), a treatise of how civilizations emerge.²⁹ While none of these three writers acknowledged the meanings that the products of design could have for the communities affected by them, Rittel (Protzen & Harris, 2010: 188-195)³⁰ came close to that acknowledgement by identifying design with the development of defensible plans for interventions or compelling arguments for future artifacts. He was one of the few who recognized that design is not separable from what the use of language can accomplish when enacted.

²⁷ Jean-Pierre Protzen and David J. Harris, *The Universe of Design: Horst Rittel's Theories of Design and Planning*. (New York: Routledge, 2010).

²⁸ Herbert A. Simon, Herbert A. (1969). *The Sciences of the Artificial*. (Cambridge, MA: MIT Press, 1969).

²⁹ Giambattista Vico, (1744/1968). *The New Science of Giambattista Vico*, 3rd ed. trans. T. G. Bergin and M. H. Fisch, (Ithaca, NY: Cornell University Press, 1744/1968).

³⁰ Protzen and Harris, *The Universe of Design*.

Since innovations, by definition, cannot be predicted from the past, the above supports the view that a design discourse must be grounded in an *epistemology that provides spaces for human actions to create worlds rather than blindly submitting to a causally determined ontology*. To open up such spaces, designers need to explore whether claimed causalities are mere fictions, based on data that no longer matter, or whether they conceal openings to be escaped from. Designers need to boldly question the cultural blindness regarding what language does, the habitual enactment of ontological commitments, the existing social structures that resist innovations, and the data cited in support of truth claims. Whatever the reasons for resisting change in the midst of cultural artifacts, designers' willingness to systematically question these certainties and reduce those associated with innovations is what generates possibilities for practicing design.

A design discourse needs to embolden designers to be fearlessly critical of knowledge claims of what cannot be done of what is taken for granted, of taboos, institutional interests in material culture, and scientific determinism. Let me discuss some of the properties of a design discourse that create and preserve spaces of possibilities for developing innovations and planting them in receptive communities.

- **Its artifacts.** Designs that leave a design firm may take the form of drawings, presentations, prototypes, computer simulations, or suggestions for practices, but their materiality is unlike what designers seek to accomplish with them. The artifacts of a design discourse propose something not yet in existence—an innovation, something that would not come about naturally. Thus, whether a design bears fruit is not knowable at the time of its proposal. It may *prove itself in a distant future* or not at all. Proof of the realizability and actual value of a design lies *outside its proponents' control*.

Physicists, by contrast, prove their theories by creating evidence that validate said theories by criteria enshrined in the discourse of physics. Similarly, interpretations by literary scholars are always made in the presence of available texts. However, the future success of any design is contingent on those who have a stake in them; that is, by their stakeholders.

By definition, *stakeholders have diverse interests, possess the intellectual and material resources to support or oppose a design, can articulate their convictions publicly, and are able to mobilize others to their cause*. Whether designed artifacts end up populating the public domain depends on their designers' ability to anticipate their stakeholders' voices and their ability to convince them of the benefits of playing a part in realizing them.

The need to listen to those on whom the success of a design depends is not a new suggestion. Market surveys have informed design practices since the industrial

era, and recent, called for, user-centered design has become fashionable. The former assumes that the buyers of industrial products are the only ones that count, the latter, that the so-called end-users are the ones who matter. Such narrow focuses have the effect of hiding the diverse stakeholders in a design who ultimately determine whether it succeeds or is forgotten. The stakeholders of a design certainly include its projected users or consumers; but they are also the clients who listen to the designers' ideas and pass them on to decision makers. The latter might include the board members of a corporation who deliberate on whether a design fits its public image. They may involve engineers who work out the technical details for the artifact to be produced and work reliably. The voices of bankers who consider investing in its production surely play a role. There typically are government regulators, marketing experts, advertisers, distributors, sellers, and, following the actual realization of the artifact, there are critics, suppliers of needed resources, and advocacy groups worried about the political, economic, or ecological consequences of the design. The stakeholders of any design do not consist of uniform masses of individuals, as might be conceived in a market of buyers; they differ vastly in what a design means to them, the intellectual and economic resources they are willing to make available, and their ability to *cooperate in networks that can bring a design to fruition*. Some such stakeholder networks may be frozen, such as within a manufacturer, but most stakeholders pursue their own stakes in a design and relate to each other not by simply following procedure but by being energized by the designers' project and willing to do more than merely follow instructions. To succeed, the artifacts of a design discourse would have to have attributes that not only encourage the needed networks of stakeholders to form but also find a path through them.

In view of the foregoing, a design discourse that conceptualizes its artifacts as symbolic representations of what designers want to see realized—for example, artistic renderings of designers' visions—may not go very far. And designs conceived as product specifications or instructions that stakeholders are to follow are effective only in established social structures that are commanded by authorities. The artifacts that have a good chance to succeed need to be designed *to inspire* diverse stakeholders, *enroll them into the designers' project*, suggest *meanings that stakeholders can enact with the resources available to them*, and *become the catalysts for the emergence of networks* that facilitate their eventual realization. When introducing the iPad, Steve Jobs was convinced that it would *"create its own landing strip."* His metaphor suggests that the best designs enlist their stakeholders into cooperatives that assure their futures. Taking dialogue seriously amounts to a considerable gestalt switch in conceptualizing the artifacts that a design discourse needs to create.

- **Its discourse community.** Designers have no problem recognizing the community to which they belong. They know each other by how they talk of their work, iconic designs, influential designers, the schools they subscribe to or oppose, where they had meet professionally, their specializations, and what inspires them. However, the path to enter this community is not as formalized as in other discourses. For example, PhD degrees in design have become more frequent lately but are far from being a ticket to membership in the community of designers. Some designers even consider academic qualifications obstacles to being competent designers, and they may have a point, as advanced degrees are often earned in disciplines that are epistemologically incompatible with the design discourse. Moreover, designers often work in teams with experts from other disciplines or design offices that rarely list the individuals participating in them.
- **Institutionalization of recurrent practices.** It should not be surprising that this somewhat loosely-defined community of designers has been less successful in institutionalizing essential design practices. Of course, many universities have departments that teach one kind of design or another. They tend to develop around particular philosophies, depending on whether they are housed with the arts, the humanities, or engineering. There are only a few decisive textbooks but quite a number of regularly appearing magazines. Several countries house professional associations for designers. Computer-aided design is widely used and has standardized some practices. There are internet discussion groups and international meetings on specialized topics; none, however, unite the design community as a whole. In the struggle to gain respect of the design profession when collaborating in larger design projects or in the public, there is a temptation to model design discourse on the sciences with a call for design research (Friedman, 2003).³¹

Taking *design research* literally, I am suggesting instead that it inquire into the practices of designers with the aim of improving their discourse and institutionalizing successful design practices in the form of teachable methods, principles, and practices. This objective renders design research the key for a design discourse to remain current, to continuously redesign itself in response to the changing realities that designers are facing.

³¹ Ken Friedman, "Theory construction in design research: criteria: approaches, and methods," *Design Studies*, 24, no. 6 (2003): 507-522.

There are several obvious targets of design research that contrast with traditional scientific research objectives. For one, designers' interest in existing realities is at best concerned with opportunities to intervene in current practices or replacing problematic conditions. Therefore, one important focus of design research is to *reveal present variables*, that is, what can be varied, intervened with, and changed for the better. The invariances that traditional scientific research seek to generalize, that is, what is believed to be unalterable, may have to be approached with skepticism and systematically questioned. Simon (1969)³² suggested that design is concerned with finding alternatives for improving something, not with finding and following trends—with finding alternatives for what can be decided upon, not with where decisions are foreclosed. In the public domain of cultural artifacts, this means examining what people are bothered by, inconvenienced, endangered, limited, or oppressed, where they have spent too much of their scarce resources, experienced failures, or cannot get to where they want to be. Ethnographies of what is possible, conceivable, desirable, or replaceable show considerable methodological promise (Merzali Celikoglu, et al., 2017).^{33,34}

I should mention that Simon (1969)³⁵ related design to making improvements, including solving problems. According to his conception, the success of a design is measured relative to what currently exists. It ties designers to whoever defines present reality. I claim that all of the more important innovations have started from the other end, from *imagining possible futures*. Think of the invention of printing, air conditioning, airplanes, or personal computing. None of them solved problems recognized at the time of their inauguration. Designers succeeded by envisioning realistic courses of actions to reach desirable possibilities. The point is to measure designs not from how far they moved from the present rather how close they come to desirable futures. There are methods to generate possibilities. For example, combinatorial analysis systematically explores all combinations of a list of technologies, functions, or practices. Among the human-centered methods for generating viable possibilities is the use of conversations or brainstorming sessions, analyses of popular novels, mythologies, fairytales, and science fiction. They all narrate possibilities that their readers can imagine, talk of, enthusiastically embrace, extrapolate, or abhor. Human flight, going to the moon,

³² Simon, *The Sciences of the Artificial*.

³³ Ozge Celikoglu Merzali, Timur Ogut Sebnem, and Klaus Krippendorff, "How do user stories inspire design? A study of cultural probes." *Design Issues* 33, no. 2 (2017): 84-98.

³⁴ Ozge Celikoglu Merzali, & Klaus Krippendorff. Towards Ethnographies of Unimagined Possibilities: A New Paradigm for Human-centered Design Research. 2022 submitted

³⁵ Simon, *The Sciences of the Artificial*.

cell phones, and artificial intelligence, all started in fictions. This is an endorsement for studying futuristic literature.

Innovations can become real only if they motivate stakeholders to work towards desirable futures, making it attractive to play their parts. The process of selecting realizable paths that stakeholders could pursue is often clouded by claims of designers' ingenuity. But design research can easily examine the strategies that designers employ *to create such paths and explain them in ways that inspire their stakeholders* as well. Simon (1969)³⁶ discussed some older methods, for example optimizing, satisfying, and resource allocation. Steve Jobs emphasized simplifying, minimalizing, and merging functions into intuitive user interfaces. Others talk of synthesizing, integrating, reframing the familiar, using novel materials, technologies, reconciling incompatible requirements, and increasing diversity of uses. These are not just design principles, they also provide convincing explanations for what encourages the imagination of innovative paths to desirable futures.

Incidentally, some such methods can be found in literature as well and are taught under the headline of composition with the aim of creating narratives that compel their readers to read on and encourage conversations among them.

Some of these strategies seem vague largely because they involve the kind of tacit knowledge that underlies most articulations: metaphors, synecdoches, and images. Recognizing the difficulty of communicating tacit knowledge has encouraged designers to invite stakeholders into ongoing design processes, so-called *participatory design*. It introduces into design processes meanings that one could not find through interviews, allowing designers and stakeholders to learn together, which can also generate surprises. But the more important benefit of participatory design processes is that the results have a better chance to sail through the network of stakeholders. Design research can develop these strategies into teachable methods.

There are many more design practices that design research can address, investigate for their effectiveness, and articulate for distribution with the design discourse community.

- **Its boundary.** Recall that the discourse of physics validates its theories within its own boundary. Practical uses of their theories by other disciplines have no impact on their validity, nor does public opinion matter to physicists. The discourse of literary scholarship is similarly closed to extra-literary interests.

³⁶ Simon, *The Sciences of the Artificial*.

Their boundaries and those of most academic disciplines contrast sharply with the constitutional necessity of *a design discourse to be open to the discourses of its stakeholders*. Design discourse cannot but embrace their multitudes, coordinate dialogue among them, and respect their criteria for participating in the networks that bring its designs to fruition.

This necessary openness does not need to impinge on professional designers' ability to define their own discourse community, institutionalize successful design methods, and create the artifacts they are proud of conveying for use by others. However, unlike most academic discourses, the criteria for accepting the artifacts that designers develop are only partly theirs.

This acknowledgement prompted me to call a design discourse *undisciplined*. Designers cannot impose their design logic on the discourses of their stakeholders. They can plant the seeds of innovation but rarely control what grows from it. To assure the efficacy of their artifacts, a design discourse needs to institutionalize designers' *ability to listen to divergent voices*, awaken voices that are not volunteered, and transform what they hear into arguments for designs that compel their stakeholders into action.

It also means that designs need to remain sufficiently open for stakeholders to have their say. Inasmuch as design activity is fundamental to being human and a major motivator to create artificial worlds to dwell in, I suggested that human-centered *design needs to delegate design* (Krippendorff, 2006: 74).³⁷ It suggests not limiting design to written specifications or definitive courses of actions for stakeholders to follow, rather to provide sufficiently large spaces for stakeholders to add their expertise in the process guiding a design through a stakeholder network. The principal openness of computers to the many worlds that their users can install can serve as a machine analogue of designs that can inspire stakeholders to play their parts. The success of any design lies in traveling through the networks of its stakeholders and opening spaces, one after another— for everyone interested and enthused to contribute to what it ends up being.

Finally, *designers cannot avoid being stakeholders in their own designs*. In larger development teams in which diverse experts work together, participants tend to be assigned responsibilities that fall into the domain of their discourse.

Teamwork entails respecting the discourse of their members. The essential openness of design discourse does not imply superiority. It merely enables designers to cooperate with different discourses without claiming to be in charge of a stakeholder network.

³⁷ Krippendorff, *The Semantic Turn*.

- **Its justifications.** Because the benefits of a design that leaves a design office can be experienced only in some foreseeable future, its acceptability by stakeholders hinges on the plausibility of the arguments that designers can advance for its virtues. Substantiating such arguments calls on citing design research that was undertaken in the development of a design and demonstrating what can be expected from its realization. Such justifications are unlike the hard and often quantitative evidence that other disciplines can bring to the table. I already mentioned the need for designers to be critical of factual claims derived from past data, and especially excluding the voices of other stakeholders. This may well be a tall order, but whatever designers choose to cite, show, or simulate to justify their work needs to be phrased in terms their stakeholders' future.

Justifications apply to individual designs but design discourse also has a larger mission. It needs to preserve or enhance the reputation of a productive design profession. Design drives innovation. Human-centered design keeps a culture viable and enables society to cope with its challenges. It stimulates competition from within and responds to environmental changes from without. The profession of design rises to its cultural mission only with a *design discourse that is able to justify itself in the very public to which it contributes its artifacts*. It needs to maintain its boundary while taking its place in the ecology of other discourses.

It should be apparent that the notion of a design discourse, as presented above, resembles several features of conversation or dialogue, but on the level of communities whose discourses it must respect as a condition for its own standing. I discussed most of its features as the logical consequences of the realities that professional designers are articulating today. I could not avoid this account of design discourse becoming normative or deontic or what it should be. In a way, I applied design discourse to itself, designing it in the course of the above. My hope is that design discourses inform design education and expand designers' attention from designing individual products to designing human interfaces with all kinds of technologies, through them with other members of the public, including strengthening the design discourse. This ideal is increasingly recognized but faces some cultural barriers. I want to conclude by mentioning four to be overcome.

- One is the cultural commitment, already mentioned in the introduction, to a *representational conception of language*; or, as Bakhtin would say, to monologue. This accounts for the widespread failure to see that how language is used actually matters. This blindness has a long history and many disciplines are trapped in it. In the design profession it is encouraged by the traditional association of design with the visual arts and aesthetics. Designing artifacts to be aesthetically pleasing and showing this possibility in visualizations of proposed products nudges designers into

representational conceptions, privileges visual forms over linguistic abstractions, and keeps cultural innovations to a minimum. Moreover, the common *form/content* distinction perpetuates the epistemologically impossible claim that texts and artifacts are the containers of meaning. A shift to dialogical conceptions of reading texts, focusing on interfaces with artifacts rather than what they are, and conceptualizing design as a discourse that generates innovation should not be too difficult. After all, designers talk—when working in teams, and with stakeholders—during which meanings can multiply and artifacts that permit these meanings come to fruition. I have said elsewhere that *any design needs to survive in the discourses of its stakeholders* (Krippendorff, 2006)³⁸

- A related barrier results from the interpenetrations of discourses with incompatible epistemologies. One source of such interpenetrations stems from designers' professional preoccupation with competing among each other to be at the cutting edge of cultural developments. This can manifest itself by talking of their designs in terms of the discourses of fashionable disciplines, without realizing that all discourses come with discourse-specific *epistemologies that could and often do undermine the cultural objectives of the design profession*. I discussed the incommensurability of natural science and design discourses. This applies to the uncritical use of the currently trendy discourse of the cognitive sciences as well. Conceptualizing cognition in terms of computer metaphors cannot explain human agency and the deliberate introduction of innovations into communities. Cognition is, without a doubt, involved in all human interfaces, but it cannot cope with the social construction of the world we live in.

Such interpenetrations are also evident in the efforts of one discourse to colonize another. Marketing, for example, seeks to usurp design by defining it as a way to increase sales. Arguing under this umbrella will surely limit design to redesigning the forms of artifacts that improve their attractiveness over those of competitors. Accepting such a definition would divert designers' attention from the larger aim of assuring cultural viability.

- Related to the above, many design projects *serve corporate interests in particular markets* without concerns for unintended consequences and the effects on communities outside the target population. This economic rationality renders larger systems perspectives and ethical considerations secondary to the well-being of corporations. It provides no space for ecological concerns, unless activists forcefully oppose environmentally unsustainable designs. It ignores the

³⁸ Krippendorff, *The Semantic Turn*.

harm done to communities whose voices are denied because they may not be able to make use of a design. Furthermore, it privileges short-term objectives, tends to perpetuate social inequality, digital divides along racial lines, intrusive artifacts like spyware, and sowing distrust in the public sphere by distributing misinformation and buying elections. Imposing corporate interests surely undermines a design discourse's obligation to attend to its cultural consequences, which are grounded in the respect for the multitudes of other discourses.

- Finally, while professional designers are eager to embrace research results that facilitate their work, there is hardly any tradition and perhaps not enough incentive to document what they did; why, by which methods, and how their designs were received, especially when unsuccessful. This does not bode well for the kind of design research that could improve the design discourse for the community of designers. Evaluations of design practices call on experiences with successes and failures, not just talk of one's own achievements and others' fiascos. Universities are primed to undertake design research of this kind. But as long as universities limit themselves to train design practitioners and practicing designers are reluctant to reveal their own practices to members of their community, the design discourse will not evolve as it could.

As promised in the title, this paper focused on the discourses involved in designing meaningful human interfaces with artifacts that end up populating the public sphere. It articulated the dimensions of a design discourse by contrasting them with those of conversations and other discourses, relying on a dialogical lens throughout. Convinced that many of these dimensions are also at home in the discourses of other social-change-oriented professions, I invite readers to explore how they might apply to their own experiences to the process, in the hope of refining their own discourse.

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