Reconciling Radical Constructivism with Social Organizations as Networks of Conversations and of Stakeholders

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Abstract

In this paper I am concerned with human agency and the construction of social organization. I am suggesting three concepts of human agency derived (a) from radical constructivism and autopoiesis, (b) from interactive use of language, and (c) from my work in the sociology of design. The former provides a background for human agency. The latter lead to two concepts of organization that acknowledge human agency in slightly different ways. In that process I am extending the second-order cybernetic idea of putting the observer into the observed to acknowledging the agency of humans in the construction of social organization of which they are a part. I think, talking about social systems as if that talk had nothing to do with the systems it brings about gets us back into first-order cybernetics, perhaps with the awareness that we are the observers of social systems. So, I will be concerned not with observation but with constituting social reality by participating in it constitutively. I am opposed to trivializing human agency that takes place when adopting vocabularies from discourses that cannot reflect on their communicative roles.

The most blatant trivialization of human agency that I observe is found in the design of "agent based computer programming," attributing agency to particular algorithms on account of being useful to computer users. One may take this use of agency as merely metaphorical, much as opening files and documents in human-computer interfaces are metaphors of what happens behind the screen, but the latter should not be confused with human agency. A more serious trivialization of human agency can be seen in the Actor-Network Theory (ANT) of M. Callon (1986) and Bruno Latour (1997), attributing agency to text, images and technological artifacts alike. A third example is to talk of social systems as abstractions from the everyday practices of living, sociological abstractions in particular, in effect generalizing and offering causal relationships between these abstractions in which human agency – intentionality, choices, actions, purposes, language and communication – which is important in social life, is no longer recognizable, thereby delivering the human use of human beings to those who are able to use their human agency irresponsibly and unchecked.

However, in this paper I will take Richard Rorty's (1989) suggestion to heart not to get sidetracked into critically reviewing what I am opposing and I shall propose instead vocabulary of what I am favoring, keeping in mind why I am doing this.

Observeration Versus Participation

Adopted largely from the natural sciences, the position from which sociologists prefer to theorize their subject matter is that of **detached observers**, spectators of unfolding events, who see no reason to include themselves in what they are theorizing. For social scientists, this position has considerable **practical advantages**.

First, it gives theorists considerable *freedom to develop theories* whose validity criteria are housed solely in the theorist's discourse community. Indeed, definitions of sociology, as of any social science discourse, include institutionalized validity criteria that are constitutive of (the) discipline. Complying with them gives discourse practitioners assurances that the theories they propose are acceptable within their discourse community, but not necessarily outside of it. Frequent universalist truth claims notwithstanding, sociological theory deals with the subject matter of sociology and psychological theory deals with the subject matter of psychology, not with religious topics, not with theories of physics, each upholding their own validity criteria.

Second, and especially when a discourse arms itself with specialized methods of observation and techniques of analysis, e.g., statistical ones, whose use is not shared with those observed, theorist assure themselves *a position that is superior to those observed*, a superiority that scientists generally enjoy and defend. This superiority is manifest in the use of a representational language, void of first person references, in fact implying a God's eye view of the universe, a position from everywhere and nowhere.

Third, taking this position allows the social theorist to *deny accountability* to those theorized, believing in the convenient illusion that the data they have "found" in an undisturbed nature are the sole arbiter of the theories they promote, not what their theories do. Those theorized are referred to in third person plural terms, as "they," which defines "them" outside the social scientific discourse, denying "them" the right to hold the theorist accountable to what their theories do.

Forth, detached observers, spectators, of events that unfold in front of their eyes are unable to determine why something happens the way it is observed. Members of theatre or movie audiences, for example, cannot know whether or the extent to which what they see is scripted in detail and mechanically executed or the result of spontaneous and intentional human interaction – unless they know the script, believe an authority on the performers' intentions, or can ask questions of them. Because asking questions would interfere with the performance and thus violate the ideal of objectivity, coupled with prescription of Occam's razor to take the simplest of several explanation for the truth, leads to *causal explanations*. In traditional scientific pursuits, causal explanations have become the preferred explanation if not the only acceptable form, notwithstanding that they trivialize those observed and certainly deny their agency. Causal

explanations, explanations in terms of mechanisms are not natural; they are the artifact of detached observation.

Displaying human agency in creating theories that in turn deny human agency to those theorized therein – denial of reflexivity – can be seen as a kind of intellectual oppression of those theorized (Krippendorff, 1996).

The alternative to detached accounts of observations is to acknowledge one's involvement in the phenomenon of interest, to offer accounts of how one's actions and use of language reveals a reality interacted with, to account for what one sees as an accomplishment, in one word: **participation**. To approach this position, I will briefly summarize the lessons learned from Ernst von Glasersfeld's radical constructivism and Humberto Maturana's biological conception of *cognition as networks of operations*. Then I will describe two conceptions of social organization. The first builds on language and leads to a conception of organizations as *reconstitutable networks of conversations.* The second heavily relies on the realization of design projects and leads to a conception of organizations as *self-organizing networks of stakeholders*. I am not suggesting that they cover the whole spectrum of social formations, or that they are mutually exclusive. I see these as providing vocabularies to talk about organizations non-mechanistically. In either case, accounts of participation in social phenomena entail accounts *from inside the phenomenon* of interest and I am suggesting that inside accounts are necessary to preserve the possibility of **human agency**.

Cognition as Networks of Operations – The Biological Basis of Human Agency

For quite some time, Humberto Maturana (2008) with Francisco Varela (1988) have argued against theorizing human beings in violation of what we know of human biology. The human nervous system, they insist, is an anatomically and physiologically closed network of neuronal activity that operates recursively on itself, i.e., any changes within it leads to further changes within it. Sensors and effectors have dual characteristics. On the one hand, they operate as neuronal elements and as such participate in the activities of the nervous system. On the other hand, they respond to or act on something outside the nervous system. Sensors and effectors inside the organism interact with bodily phenomena. Sensors and effectors at the surface of the organism are in touch with the environment in which the organism resides. The nervous system is affected by sensory perturbations and affects the effectors in return – however, without being able to distinguish what causes the perturbations.

It follows that it is impossible to see what is outside our sensors, only how the nervous system is perturbed by it. It is an illusion, therefore, to believe we could observe what is in front of our eyes. All we notice is the process of seeing, and what we see are the perturbations of the operations of the nervous system, i.e., when it operates unusually.

The inability to have direct access to the world outside, only what we cognitively construct, is the starting point of Ernst von Glasersfeld's (1995, 2008) radical constructivism. Constructivism maintains that the inference from perceptual images to things supposed to exist independently of

the constructive work of the human nervous system is unwarranted. We see only our own constructions of the world. Constructivist research, especially in educational settings, has shown what might on reflection be quite obvious, that the problems that students are facing, for example mathematical ones, can usually be solved by various cognitive constructions, coming to the same solution but by different means. In other words, being able to give correct answers to questions does not imply that students have learned the teacher's conceptions, only that their conceptions work or are, what von Glasersfeld calls, viable in an (educational) environment. Constructivist research grants human beings considerable freedom to construct any reality they please provided they work, or as Maturana would say, as long as the organism can maintain its autopoiesis, i.e., continues living.

The biology of cognition insists that the human nervous system, being self-organizing, cannot be instructed the way a computer can be programmed. A teacher can say what she wants, but cannot cause particular cognitions to arise within the students. I call this property of the nervous system *cognitive autonomy* and maintain that it is a condition for human agency.

One of the unique features of our nervous system is that we are mostly unaware of the arbitrariness of our reality constructions, until we encounter their non-viability. Forced to consider alternative constructions, we are momentarily cognizant of our cognitive autonomy, our ability to reconsider, reconceptualize, reconstruct and settle on a construction that works. But after this happens, we quickly forget what did not work in favor of what does and fall back thereby on the belief that our current construction is real.

The notion of cognitive autonomy seems to contradict the experience of influence, the experience of one human being affecting another intentionally, which neither constructivism, nor the biology of cognition have adequately dealt with and cognitive science considers unproblematic as it builds on computation as a platform for exploring human cognition. Unlike humans, computers are organizationally wide open, i.e., programmable. Epistemologically, assuming cognitive constructions of reality to be ideally correct representation of what exists outside amounts to denying one's cognitive autonomy. Experientially, this assumption makes sense when cognitive constructions are not perturbed, and their enactment conforms to expectations. But it makes also sense when one is committed to maintain particular reality constructions in interaction with others who have a similar preference for their stability. Behaving predictable creates *backdoors* to influences from the outside. One of the most important backdoors to the cognition of others is learning and using language. Language, its meanings, requests, promises and warnings, is mostly used habitually. Children learn to speak Ôproperly' while doing things Ôproperly' before they are capable of making choices among linguistic expressions and actions. We speak of the meanings of words, having forgotten the history of using these words. Using language habitually is part of being a predictable member of a speech community that values consensual coordination of the body, speech and actions of its members.

Thus, human agency resides between two seemingly conflicting ideals, cognitive autonomy and linguistic competence, between individual freedom of choice and socially constrained choices, between possibilities that can be experience or examined and habitual practices that are taken for granted or unquestioned. For example. the ability of linguistically inducing fear provides an entry to all kinds of influences geared to avoid bad things from

happening. Even claiming to be free to make a particular choice, which occurs in language, rests on the common use of words whose meanings are not freely chosen. Agency can only be claimed on the ground of habitual elements.

Organizations as Reconstitutable Networks of Conversations.

I shall discuss four features of this conception of organization.

First, **reconstitutability**. The history of theories of organization is a history of the use of metaphors for collective practices. The industrial revolution replaced feudalist metaphors – privileged elites expecting loyalty from servants who were locked in their position – to metaphors of the mastery of mechanisms with replaceable (human and non-human) parts. It created hierarchically controlled assembly lines, serving the needs of the owners of factories, the top authorities of bureaucracies or the commanders of armies. Human participants could be hired and replaced as needed. Then metaphors from biological organisms entered conceptions of organizations, encouraging the harmonious subordination of parts to the well being of the whole, functional differentiation, allowing both hierarchical and horizontal interactions to take place. While still dominant today, the biological metaphor is slowly undermined by metaphors of networks, communication nets in particular, which are flatter than hierarchical forms and treat the nodes in such networks equally – except for their connectivity.

Common to all of these conceptions is that organizations persist in time, adapt or grow in certain directions (number of employees, size of the market, efficiency and wealth). The conception of this persistence may be encouraged by being housed in a certain building, making use of durable production equipment, being registered as a legal entity and using durable signs, logos, designs and names. I am questioning the idea that organization need to persist as functioning mechanisms, organisms or communication networks. Instead, I am suggesting that the central feature of all social organizations is their reconstitutability at different times, with same or different people, and perhaps at different locations. In understanding this feature, human agency is indispensable.

Experientially, many organizations cease to exist at nights, on holidays or without us, but they may be reconstituted when the right kind of people meet at the right time, such as when the same employees show up for work at 9 am or when a family comes together after everyone worked at different places. Continuing employees know each other and when they come together again after a period of absence, they may continue where they had stopped. The seminar I am teaching meets twice a week for one and a half hour each. During the semester, I am confident that this seminar will be reconstituted at scheduled times. Outside that time, each of us participates in other organizations, student meetings, faculty committees, restaurants during lunch hours, stores or in families.

Not all organizations have continuing employees, their individual membership shifts from one set of actors to another. So, two soccer teams that have never played against each other meet on a soccer field and the organization Ôsoccer match' is born. A court of law comes into being

when a case needs to be adjudicated, all required players are present and do what is expected of them. Organizations with discontinuous employees tend to institutionalize lasting signs for potential constituents to recognize each other as candidates for reconstituting a particular organization. The doctor's white coat, the police officer's flashing lights on their car, the shop keeper's place behind a counter, the judge sitting robed on an elevated desk – all of these institutionalized signs serve to indicate a social actor's ability, willingness or privilege to participate in the reconstitution of the signed organization. When such signs are reliable and match across potential participants, it is easy for everyone to fall into their place within an organization. Another set of signs are structures with open places, a bus, a church, an office building – which invite actors to take up places in them and thereby reconstitute a means of public transportation, a religious service and a working office respectively.

Reconstitutability distinguishes social organizations from machines, whose parts are permanently in place or engaged, and from organisms that must maintain their uninterrupted autopoiesis. Reconstitutability enables social organizations do dissolve themselves, remain dormant for a while and reconstitute themselves when needed. Social organizations without reconstitutability grant their members little if any choice which is typical for prisoners or slaves. Theories of organization that attend only to what its members (have to) do while being part of an organization flirt with totalitarianism by ignoring the role of human agency in two essential organizational phases. They ignore the human agency evident when reconstituting an organization, and they fail to recognize that members of organizations voluntarily, contractually and/or temporally surrender some of the agency they do possess to the larger organization.

The ability to reconstitute itself supersedes all other conditions of an organization's viability. Organizations that do not reconstitute themselves or cannot for lack or human or material resources may remain dormant for a while but eventually die.

Second, **accountability**. To obtain data in his study of the power elite in the U.S., C. Wright Mills (1939) decided to learn to know what happened inside that elite and ended up visiting boardrooms and observing meetings were decisions were made and implemented, and power was exerted and accepted. He soon realized that the traditional macro-theoretical conceptions of power were too simple, and discovered the richness of language – not in the conventional sense at a medium of influence, but – as the site where the meanings of decisions were created and dismissed. In a landmark paper, Mills (1940) described the vocabulary of motives that decision makers use to justify their decisions and actions. His approach developed further (Scott & Lyman, 1968, Buttny, 1993) and is now discussed in terms of accountability. It describes human agency not in terms of individual/psychological conceptions (awareness of alternatives, criteria of decision making) but in terms of the accounts that human actors may be ask to give and offer in response, or may voluntarily offer in anticipation (if not fear) of being held accountable for what they say or do. The two accounts in which agency is defined are excuses and justifications, both conversational moves.

Excuses admit that something untoward happened but are used by *actors to deny their agency*, appealing to causes not under their control, accidents, lack of information, or being under the influence of or command by someone else.*Justifications*, by contrast, *acknowledge an actors' agency*, and are offered by actors convinced of the virtue of their action, wanting to be sure that

others see its virtue as well. The point of accounts is not whether they are true or false, but whether they are accepted as valid excuses or good justifications *within* the conversations in which they are offered. Acceptance of excuses defines the conditions under which agency is deniable. Acceptance of justifications certifies a speaker's agency but also that the action in question is virtuous. Accountability is the social manifestation of human agency – not defined by a detached observer, but allowed to be determined by those affected by the action.

As an aside, texts cannot be held accountable for what they are, nor can technological artifacts offer accounts for what they do. This is one reason why I consider generalizing human agency to texts, images, and artifacts trivializes the concept of agency and needs to be ruled out.

Third, **networks of conversations**. I am suggesting that all social organizations are realized (made real, come to life) in networks of conversations. *Conversations* are locally organized formations of more or less free flowing verbal interactions among a limited number of identifiable participants. The number of participants in a conversation is limited by the amount of attention individuals can devote to each other. A conversation is interactive, dialogue not monologue. Prototypically face-to-face, conversations also can take place by telephone and electronic communications. Granted, the possibility of meetings larger than what one usually calls conversations, union meetings, legislative sessions, ceremonial gatherings, or public protests, but these almost always are the outgrowth of preceding conversations. Even large weddings amount to numerous small conversations framed by and conversing about a ceremony. Conversations consist of speech acts, including requests, commitments and accounts that coordinate the activities and reality constructions by their participants.

The realities that participants in conversations jointly create range from the establishment of conventions, mutual understandings, or building something collectively. Minimally, conversations create their own history of what happened, usually available to all participants, and often serving as the common background for future conversations. Conversations can yield commitments to act, divisions of labors, negotiated settlements, treaties or business agreements. Many conversations accompany and influence ongoing work, whether consuming food while involved in a dinner conversation, creating a text that satisfies all contributors or producing an artifact at an assembly line.

Conversations become networked in at least three ways. First, members of a social organization may *sequentially participate* in several conversations within that organization, taking into current conversations what had transpired in preceding ones. Some organizations organize such networks according to principles of representation, such as when representatives of local working groups have departmental conversations, thus different connecting groups without direct conversations, ultimately meeting in the boardroom of a corporation. Second is the networking due to *operational connections* – such as when the products of one department serve as the starting point of another. This network tends to be more horizontal with the members at the boundaries of local conversations negotiating their interfaces. Third, is the sharing of *documents* and *communication technology* generated in one conversation and/or available to other conversations. Texts can coordinate conversations without direct human contact and serve regulative functions within an organization. There are also connections between an organization and its outside environment, which make use of all three ways to connect. Outsiders may be

recruited to join an organization or be hired as experts, bringing with them expert knowledge, the histories of conversations outside that organization and familiarity with the voices of others. There typically exists much communication between an organization and its clients, establishing operational connections to the outside, often in writing.

Fourth, **text** and **technology**. Networks of conversation also create, preserve and use texts and technologies of at least three kinds.

Organizations' reconstitutability is enhanced and their stability is prolonged when the histories of conversations are not only remembered by their participants, but also written down in the form of *protocols* of what transpired in conversations, made available to continuing deliberations, especially to participants new to a conversation; in the form of *rules of conduct* that have proven useful in the past and are now generalized to other conversations; in the form of *contracts* to be honored by present and future members of the organization and agencies outside that organization. Some of these texts are required when the organization is considered a legal entity that insists on rights, assumes obligations and needs to conform to certain practices, such as paying taxes. All of these texts have memory and regulative functions, memory functions as they extend the accessible history of recurrent conversations beyond the lifespan of individual members, and regulative functions as they confine the conduct of individual members and direct the conversations in which they participate towards organizational goals.

The network of conversation is operationalized by texts that are passed on across different networks, coordinating the relationships between different kinds of conversation, for example informing each other of the commitments made in one and impacting another, assuring that different conversations do not work at cross purposes. The operational meaning of texts may be codified in terms of hierarchies within the network of conversations, i.e., conversations that take place on different levels governing an organization and therefore have different effects on the operation of an organization. The further removed conversations are of each other, the more important are texts.

Communication technology in the broader sense, including information technology and data bases, operationalizes the network of conversations within organizations as well, but unlike texts. The support they provide is infrastructural. Buildings, workplaces, telephone lines, data banks and computers relate to their contents as narrative structures and grammars relate to verbal expressions. They can accommodate the transmission, storage, retrieval and use of a great number of texts, but limit what can be communicated to where channels of communication are available, what can be stored in the form of durable records, retrieved, and applied to current conversations.

To be *texts*, texts must be recognized as readable. To extend individual memories, provide guidance or inform, texts must also be read by individuals, which involves processes cultivated in a speech community or conversation. Similarly, to be an artifact of a certain kind, it must be identified as such. But to benefit from that artifact – whether it is a library, a medium of communication or a computer – requires the competence of users to interacting with it. It is not far fetched to extend the notion of literacy to the human use of technological artifacts, for example of computers. The difference between texts and technological artifacts is that the reading of texts is essentially personal, it informs a reader's behavior, whereas the interaction with artifacts not only

informs their users about what they do but also affect the users' environment, including other people and the material world.

I want to be explicitly denying agency to texts and artifacts. Texts do nothing without a reader, and their meanings vary with the conversations in which readers are involved and the speech communities of which they are a part. If a text informs, then only because of its readers' agency of reading it as such, if a text constrains then only because its readers construct them as such, if a text opens opportunities, then only because its readers create them with the help of the text. Meanings are not contained in texts. Texts do not speak, least of all for themselves. Reading demonstrates agency.

The same must be said about *technological artifacts*. All artifacts are put in place by human agents. Most are controlled by human agents although some may proceed without further attention – thermostats, traffic signals, automatic pilots and algorithms for buying and selling on the stock market. Neither of these uses make artifacts into agents. Computers cannot account for what they do. They only do, efficiently perhaps, but without human intelligence.

To pull these features of organizations into an example, let me describe my own organizational involvement. Being on the faculty of the University of Pennsylvania, I am participating in numerous but finite conversations. I participate in faculty meetings, teach seminars involving graduate students, advice students in private, am on doctoral committees discussing and debating dissertations, am member of various university wide committees, besides attending colloquia and enjoying social occasions. In these conversations I know what to say and how to respond to colleagues, students, administrators and acquaintances in my physical, academic, and functional proximity as well as through internet connections. I have an abstract idea of the university's organizational hierarchy and a concept of its mission. I can read applicable rules of conduct representing the history of how the university resolved past problems. I continuously renegotiate my identity within limits acceptable to others. I make commitments and keep them, and I employ speech acts to rearrange my environment in order to succeed in what I want to do. Should I violate written rules, I am sure to get a response from pertinent office holders, without necessarily knowing who that will be since individuals change their roles more often than the definition of their offices. The further my conversations are apart others the more I hear from them through writing only. I am reading their response in terms of the rules that make it possible for me to be a member of the faculty as well as the various conversations, some of which exceed the lifespan of most university employees. The university exists only because sufficient numbers and kinds of qualified individuals are willing to come together and reconstitute the network of conversations in which a university operates daily, weekly, monthly and yearly, and for which it provides the umbrella of a conceptual whole. Much of what I know about my university is written and inscribed in the buildings and technology that facilitate its network of conversations. No doubt, my conversations are different from that of faculty members in schools other than my own, in the faculty senate, in the administration, in the editorial boards of university and student publications. Maybe a university affords its employees more freedom than those in a manufacturing plant, but all organizations are grounded in what people say to each other and what their contributions mean to other participants.

Organizations as Self-organizing Networks of Stakeholders

I am sketching the approach taken towards a sociology of design (Krippendorff, 2006) in six key concepts.

First, **designers** envision possible futures, including ways of life with artifacts they can design in environments build or influenced by others. Designers inquire what is currently variable and explore the feasibility of paths to proceed from a present state to a desirable future. Designers make decisions with potential impact on the world of others. They are agents and as such accountable to those potentially affected by their actions.

Traditionally, designers were employed in industry, largely to render industrial products appealing, i.e., marketable for the benefit of their manufacturer, who simply took their ideas and saw to it that they were realized if profitable. Following the model of mass production or mass communication, designers were categorized as applied artists and users were considered merely consuming what industry provided them – much like the members of mass audiences who were construed as receivers of entertainment, subject to being told what to buy or how to vote. The outsourcing of design activities to independent design bureaus on the one side, the rise of consumer advocacy and environmental action groups, on the other side, and the shift towards a market driven democratic politics of production in the industrialized world have broadened the notion of design and quite radically changed the fabric in which technology is produced today. The production of the material culture of contemporary society requires a less corporate conception of social organization.

Designers produce a particular kind of artifacts: Models, drawings, narratives, presentations, plans or suggestions of what might be realized in the future. These are artifacts by definition of being skillfully crafted, having materiality and could not come about by unattended nature. They are not final products, however. The artifacts that designers produce need to set in motion a process that promises to results in improvements of other people's lives through the realization of new technology, implementing new individual or social practices and usually both. The process that professional designers need to set in motion is organizational, without necessarily specifying the organization that could realize a design.

I am not depicting professional designers as prime movers of technological development. Sometimes the ideas for desirable futures come from designers, sometimes from literature, science fiction, for example, and sometimes from industry. Regardless of what initiates such a process, being always future oriented and not explainable by natural laws involves an agency that we call design. Also, I do not wish to limit design to what professional designers do. Preparing a meal, writing an essay, planning a trip, furnishing one's living room, reconfiguring one's computer are as much design activities as are developing the machinery to manufacture material products or coming up with a marketing strategy to sell them. Design is a basic human practice through which we realize ourselves. However, design in the everyday conduct of life may not necessarily lead to social organizational forms, hence the need for a sociology in which design takes place, both professionally and mundane.

Second, **stakeholders**. Designers typically are surrounded by intelligent professionals who have an interest in a design: clients, engineers, CEOs, financiers, sales people, and researchers who provide data in preparations for a design or experiment with prototypes. Design literature says little about them while much is written and argued about users. In fact, most of the professionals just mentioned talk about THE user, as if they were familiar with that typical individual, as if he or she existed, and as if THE user were the termination point of all design concerns. User-friendliness is an important sales argument. A quality called "usability" has recently entered design discourse, and the phrase "user-centered design" is to suggest whom designers need to address. To me, users are stakeholders as well and typically consist of a great diversity of people. Moreover, users are not the target of all design concerns. Users work with maintenance professional, second-hand users and recyclers.

More generally, stakeholders

- Are able to claim their stake (interest) in a particular design, the technology of which a design is a part or a project being proposed. This makes stakeholders political actors in pursuit of their own agendas. Stakes are not only economic. They may be political, cultural, aesthetic, moral, etc.

- Are able and willing to mobilize resources for or against a proposed design: information, expertise, money, time, connections to members of their communities, and power of the institutional roles they occupy

- Are able to affect changes in the world, transforming something into something else, whether accomplishing a step in the realization of a design, selling a product, getting a candidate for political office elected or getting other stakeholders involved

- Are intelligent agents in their own worlds, experts, not mere recipients of instructions, and knowledgeable of and sensitive to the world of others

- Are open to delayed gratification for what they do. For example, drug companies need to spend much for the development of a drug before they are able to reap benefits. Environmental advocacy groups think in terms of the costs and benefits to future generations of a design. Since design concerns futures so are the benefits

- May be individuals, small groups or large organizations acting as a unit

- Emerge whenever opportunities become evident or undesirable prospects become apparent and they disappear when possibilities are exhausted.

For example, the Coca Cola Company once announced that it would discontinue production of its traditional formula. Stakeholders popped up everywhere and forced the company to keep the beverage on the market, now called Coca Cola Classic. Having accomplished their mission, the stakeholders disappeared. Or, whenever a new technology comes on the market, numerous secondary industries cease on the opportunities of producing gadgets that make that technology more useful. For example, the wide spread use of computers has

brought forth software developers, service providers and invited the manufacture of innumerable gadgets, volume-wise exceeding the production of computers. Stakeholders may compete by providing alternative solutions to problems. They may also develop cooperative, even corporate structures to more efficiently utilize the possibilities available to them.

Designers are advocates of their designs and hence stakeholders as well. They do not necessary require a special category as almost all stakeholders embrace some design activity.

Third, **artifacts** – things skillfully manufactured, not causally explainable – undergo numerous transformations in the process of their realization. Designers may convert problems or ideas into compelling proposals. Their clients take the designs they like and distribute them with their stamp of approval to those who matter. Engineers convert agreed upon functions into the production drawings of working mechanisms. Manufacturers use these drawings, to convert available materials and parts into tangible products. Salespeople treat these products as merchandise and convert them into deals. Consumers utilize goods, much as users transform new artifacts into used ones. Recyclers take retired artifacts apart and profit from knowing what can be recycled. Advocacy groups publicize, criticize, or judge the ecology of artifacts and their human uses with the aim of changing this ecology by means of changing public perceptions of what it does.

In effect, all stakeholders respond to manifestations of artifacts and transform them into other manifestations. This applies to the weakest case of approving or disapproving a design and thereby influencing how it will proceed, and the strongest of seeing something realized, assembling an automobile, for example.

Any artifact – a model, production drawings, work orders, parts to be assembled, an advertising image, a product in use or discarded – is always a temporally frozen manifestation of a process of material transformation from one form to another. Stakeholders claim a stake in some such transformations, increase the negentropy of the manifestations obtained pass their results to another stakeholder. It is not so that these manifestations Ôrepresent' the final product symbolically or semiotically. In fact the final manifestation of any artifact is its entropic state, its degradation into the ecology that no stakeholder can entirely stop. I suppose the transformation that a stakeholder accomplishes is analogue to Callon's (1986) "translation."

Fourth, **networks of stakeholders**. Mapping the process of developing and producing technological artifacts yields a network of transitions from transformation accomplished in the world of one stakeholder to that of another. During the industrial era and to some extend in large corporation, designers could still speak of designing products, since their specifications, once accepted, would enter a production plan that left workers no choice but to do what it demanded of them, yielding products that designers could anticipate in considerable detail. In the contemporary world, stakeholders bid for doing a job, and networks of stakeholders emerge in negotiations (conversations) across their boundaries, organize themselves by balancing individual with common interests in getting something accomplished, for example, on the market and beyond. Networks of stakeholders organize themselves around opportunities that they provide for each other.

The shift from a rational and centrally controlled system of production to self-organizing networks of stake holders is also observable in a shift from describing social networks in mechanistic terms, as ANT proposes, to describing the cooperative constitution of networks by human agents who are accountable to each other. In the understanding of design this shift is correlated with a change in understanding design from a technical or rational problem-solving activity (Simon, 1969/2001) to a social process that relies on stakeholders with different and potentially conflicting interests. Rittel's distinction between tame and wicked problems (Rittel and Webber, 1984) is a clear statement of this difference; and the recent effort of replacing the monologic of traditional designers by participatory processes reflects this shift as well. There is a recognition that projects in architecture, city planning, electronic networks – all touching the lives of typically many different stakeholders – can not be completed by any one authority but requires enrolling diverse stakeholders, appeasing opponents or converting them into supporters, negotiating across diverse perspectives, utilizing confliction expert knowledges, in short either relying on stakeholders to move the development of an artifact forward, or simply fail.

In stakeholder networks, designers may not occupy privileged positions, they have their own stake in the process of realizing a design and as in all political processes, this may involve making compromises in order to get their design through the network of involved stakeholders.

Fifth, **projects** are overarching conceptions within which stakeholders can find their places relative to each other. Projects cannot be designed the way a machine can be engineered. they may be proposed and when accepted as a framework of cooperation among stakeholders, a project may well take a life of its own. Viable projects – viable in the sense of yielding tangible results – need

- To have a point, a narrative, sharable among stakeholders, that spells out the purpose or direction of their cooperation, which may well transcend the life of its human constituents
- To provide places for competent stakeholders to feel invited to participate, to get involved
- To offer stakeholders a degree of autonomy to manage their own world including negotiating the manner of their participation and position in the stakeholder network
- To create a degree of commitment, stakeholders' willingness to use their resources beyond immediate benefits, assuring some stability in the face of imperfections in the network
- To be fuelled by possibilities that competing projects may not provide.

Sixth, **possibilities**. Seeing possibilities probably is the most important fuel for stakeholders to become part of a project, form networks and cooperating with each other. What are possibilities? For example, and as suggested above, professional designers create spaces within which alternative futures can be examined and paths to them can be evaluated and ultimately proposed. Possibilities are the creation of human agents, not limited to professional designers. Exercising human agency is being human. For a short time, people may suspend their agency, committing themselves to work machine-like, for example on an assembly line, during a psychological experiment, or in a social organization (such as describable in ANT terms), but when this is not a choice, as in a prison, the situation is inhuman. As I said elsewhere, "Design

constitutes being human" (Krippendorff, 2006:74). The ability to design once own world is intrinsically motivation – not just for professional designers, but for all stakeholders in a project. Stakeholders would not participate unless they can recognize possibilities that are meaningful to them, unless they can exercise some of their agency, unless they can design some aspects of their world. Recognizing meaningful possibilities is the primary motivation for the reconstitutability of social organizations and for stakeholders to cooperate.

Possibilities do not reside in matter but in language and individual cognition. One can talk about visions, about desirable futures and expected benefits. Designers have methods to create design spaces. Brainstorming is a method used within development teams, even computers can generate alternatives one may not be able to envision in full. The most important feature of the proposals that designers put forth, the justifications they offer for their virtue, the projects they launch, the advice they give is that they entail possibilities that their stakeholders can realize in their own terms and for their own benefits – or no organization, no network of stakeholders will form. And since designers are but one stakeholder in a network of transformations, all stakeholders need to be able to utilize some of the possibilities for their benefit while passing on other possibilities to subsequent stakeholders until all of them are exhausted and the transformations are outside human agency.

A design that does not find a producer, a product that does not find a sales person, a tool that does not provide possibilities for use, will not be realized. the same is true for legislative ideas, educational projects and plans to improve city life. Social organizations that do not distribute possibilities to their individual members can not reconstitute themselves and die.

Summary

In this essay I approached the phenomenon of social organization from the position of their active participants, not as observers – whether detached or aware of their conceptual contribution – from the position of which, I maintain, social organizations always appear holistic, deterministic and abstract, not the result of human actions. I began to root human agency in cognition, suggesting conditions of awareness of the constructedness of the world. Then, I sketched two conceptions of social organization. The first was based on human agency that is realized in languaging social organization into being. The second was derived from the kind of cooperation among stakeholders that emerges in the production of material culture. The two conceptions are as of now incomplete and their overlaps are not sufficiently explored. However, I consider them to provide attractive conceptions, hopefully contributing to discussing social organizations as continually reorganizing themselves and providing homes for human agency.

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