

Manuscript

Communication, Conversation, Discourse and Design

Klaus Krippendorff
The Annenberg School for Communication
University of Pennsylvania

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Sabine Foraita, Bianca Herlo & Axel Vogelsang (Eds.)

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Abstract

In the following, designs are conceived as proposals for innovations. As such, they occur in language. Their reality is unlike the reality that a design proposes. As communications, they need to inspire the stakeholders of designs, and enter networks of coordination in which they become realized to be used, consumed or serve as replacements of existing artifacts. Professional designers operate in language as well, in a specialized design discourse whose distinct terms, methods, and practices enable them to generate possible futures, evaluate their virtues, and participate in multi-disciplinary development teams. This chapter moves beyond the common conception of communication by exploring the properties of conversation on the one hand, and of discourse on the other hand, both in view of their roles in design practices. It also contrasts design discourse with other widely respected discourses.

Communication

The concept of communication embraces many areas of human endeavors. The most common one identifies senders, messages, and receivers, the idea being that senders are in the possession of information that receivers lack and messages are the media to transmit it. Shannon's (1949) mathematical communication theory offers a calculus for how much information is sent, how much is received, the difference being what is lost. There are three possible sources of loss. One is equivocation, the possibility that a complex message becomes simplified, details are lost, abstracted, generalized, in any case, not recognized by receivers. The second one is omission of dimensions, present at the sender but absent for the receiver, for example, the visual dimension when talking on the telephone, or the TV camera when the images it produces appear on the screen. The most theorized loss is noise, random distortions due to interferences by uncorrelated extraneous variation.

This conception of communication underlies standard evaluations of technological communication channels, telephone, radio, and television transmission, and it is widely adopted in social situations, for example, by politicians trying to get their message across to audiences on whose vote they depend, by advertisers who aim at converting audiences to buyers of the brand they promote, and by teachers who are conceived of as possessing the knowledge that their students are expected to learn. In all of these examples, information is considered communicated to the extent that the receivers' uncertainty is reduced by the senders' standards. This conception of communication privileges senders' intentions and relegates addressees to passive

receptacles. It promotes information as a valuable commodity and grants authority to those in possession of it over those who are uncertain and lacking it. It equates communication with control theory, conceiving of information as compelling compliance.

Whenever designers conceive of themselves as being in charge of how a design should be realized they operate with this authoritarian conception of communication. Investigating whether sketches are understood as intended, blaming manufacturers for misreading designers' intentions, or insisting on the appropriate uses of artifacts exemplify this conception. While adopting this conception of communication may well be a strategy for a designer to claim authority, it misses the ground on which designers can stand in contemporary society and requires for serious revisions.

Genuine Conversations or Dialogue

To me, *design is fundamental to being human*. It starts with toddlers playing with building blocks, is evident when arranging the furniture of one's living room, and is practiced when following a chosen career path. Design is intrinsically motivating in the sense of being a self-rewarding activity without necessarily achieving a goal. It is always uplifting to see what one has done. Design is also correlated with social acknowledgement, for example, when friends enjoying the living room that a host has furnished, when colleagues express appreciation of someone's accomplishments, including when a design is published and discussed.

Professional design extends everyday design in scope. It serves to make a difference to people outside design offices, differences that benefit communities of which designers may not be a part, including to people not yet born. Professional design succeeds only *with* others.

Let me outline in general terms a concept of communication that is pertinent to designers: genuine conversations.

- 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 at a doctor's office, or among office workers who happen to meet at the coffee machine of an office – without the expectations of a particular outcome.
- Conversations *extend their participants' experiences of 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 various 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. When *participants consider owning their voices* and are respected for that, conversations are *genuine*.
- 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, when asked to clarify an utterance or apologize for saying something offensive. Accounts elicited and given may well alter the meaning of what was said or done, but they too remain part of the braided histories that conversations are weaving.

- Conversations *are self-organizing*. What transpires in conversations, the braided histories they create, including any conventions that emerge, are indigenous to a particular conversation. Being self-organizing implies that outside observers of conversations neither influence nor have access to the experiences, meanings, and the sense of being able to shape what is happening as a participant. Observations, recordings, or transcripts of conversations belong to a different experiential domain.
- According to John Shotter, in genuine conversations, *everything said or done is said or done in the expectation of being held accountable* for it.¹ This mutuality assures *reflexive equilibria* and *dialogical equality*. Equality is not measurable in terms of the amount or quality of participants' contribution, rather by whether participants coordinate their *understanding* without being forced to do so. In dialogical terms, *understanding is the condition of having no further questions to ask*, it manifests itself when everyone has the feeling of being heard.

To be clear, understanding always is a personal matter. Nobody has direct access to someone else's understanding, nor can anyone literally share their understanding with someone else. In conversations it is natural for participants to construct each other's understanding from what they affirm. However, the assurance "I understand" indicates nothing other than a state of satisfaction with what was heard, a suggestion to go on, the feeling of being in sync, not a matching of individual cognitions. Claiming to understand each other manifests itself in *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. In the act of speaking and doing, we can hardly avoid considering the account we would give if asked, how it might be received, and hoping the addressees will accept them as plausible. Listening to someone invokes the same reflexive loops. Genuine conversations flow naturally within such reflexive loops. Incidentally, their reality is constantly enacted but not observable as such.

- In genuine conversations, participants *provide spaces for each other to respond* which *preserves the possibility of continuing conversations*, principally indefinitely, perhaps after some time, perhaps with different participants, perhaps concerning something else. Interruptions of genuine conversations for unrelated reasons may happen like being called for jury duty or having to move to a different city. However, when purposes dominate a conversation or a problem is to be solved, conclusions terminate a conversation that was not genuine to begin with. Moreover, when conversations turn into physical violence, conversation has ended for good.
- Conversations are *the fastest evolutionary process* I know. Conversations introduce *variations* in the form of new interpretations of what happened before, whether the history of what was said is reinterpreted, new metaphors are introduced, or spontaneous ideas are vented. Responses to them may reveal the merits of these variations and are either *selectively developed* to the point of *common satisfaction*, or left dormant in favor of something else to emerge. The possibilities that emerge through mutations and selections include many more features than go into biological evolution. Viable ideas are almost instantaneously recognized as such and by all participants, unlike in biological

¹ John Shotter. *Social Accountability and Selfhood*. (New York: Blackwell, 1984).

evolution, where mating involves only two organisms and the viability of their offspring may require years to be apparent. Joshua Wolf Shenk² found that virtually all innovations, whether in science, technology, literature, or the arts, are due to engaging in conversations, even with virtual others.

- Conversations create artifacts. The braided histories of interactions, experienced and referred to, is an obvious artifact which disappears with the death of their participants. But conversations may also encourage their participants to enact their insights outside conversations, change their living with others, and their physical environment in ways that may well last beyond the lifespan of their actors and cannot be explained without reference to the conversations in which they emerged.

To me, the process of respecting each other, granting each other spaces to participate, which leads to the inevitable emergence of mutually meaningful possibilities renders conversations basic to processes of designing with the consent of and benefit to all participants. Conversation is a fundamentally social practice of creating newness and it should be recognized as the process in which designs emerge. A recent book by two cognitive scientists concludes that “we can never think alone”.³ I contend this is true for designers as well.

Erosions of the genuineness of conversations

Martin Buber, the foremost conceptualizer of dialogue or conversation observed that ideal dialogue is empirically rare. We experience *dialogical moments* at which we find ourselves in unconstrained commonality with others,⁴ converse with each other without constraints and conceptually advance all participants alike.

Why would one bother to conceptualize something rarely experienced? I contend that it is never easy to understand what it is to be human until experiencing something missing. For example, feeling unable to say what is on one’s minds for fear of getting into trouble, having to follow rules that do not make sense, or being dismissed as incompetent or insignificant, deviates from the unencumbered flow of genuine conversations and calls for explanations of what is going on there. In such situations, genuine conversation serves as the unwritten standard against which current communication situations are distinguished, evaluated, conceptualized, and given a name, for example an “interview,” “lecture” or “command.”⁵

The most obvious intrusion into genuine conversations may well be due to the use of media of communication. Telephone conversations lack visual cues, smells, and touch expected in face-to face encounters but are still interactive and sometimes labeled conversations despite these constraints. When more than two people are involved in conference calls, the absence of eye contact and gestures makes turn-taking exceedingly difficult and imposes additional limitations on what can emerge in such interactions. Written communications are expected to

² Joshua Wolf Shenk. *Powers of Two: Finding the Essence of Innovation in Creative Pairs*. (Boston, MA: Houghton Mifflin Harcourt, 2014).

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

⁴ Kenneth N. Cissna, and Rob Anderson. *Moments of Meeting: Buber, Rogers, and the Potential for Public Dialogue*. (Albany, NY: SUNY Press, 2002).

⁵ Klaus Krippendorff. “Discourse as Systematically Constrained Conversation,” in his *On Communicating: Otherness, Meaning, and Information*, ed. F. Bermejo. (New York: Routledge, 2009a: 217-234).

conform to grammatical, typographical, and literary conventions that cannot substitute for eye contact, gestures, sound, and emotional expressions. They also delay their addressee's responses. Mass publications almost completely remove their authors from what their readers say to each other about them.

Beyond medial constraints, we also are familiar with debates that are expected to distinguish winners from losers. Job interviews, lectures, instructions, verdicts read in court, or mathematical treatises imply the acceptance of inequalities that are irreconcilable with genuine conversations. They signal the emergence of discourse. Let me mention four examples of erosions from genuine conversations before elaborating on the notion of discourse.

First, individuals may not speak for themselves but as members of a larger community, occupants of an office, or as experts on a subject matter. Claiming the voices of absent others, or speaking for institutionalized conceptions introduces virtual, fictional, or abstract participants into conversations who cannot be held accountable for what is said in their name. Reference to their virtual presences transforms conversations into games among authorities with special relationships to unverifiable outsiders. Such games are no longer self-organizing as absent others enter the process without a voice of their own. François Cooren⁶ analyses such communication situations as ventriloquies, characterized by speakers who no longer speak for themselves and accept being ventriloquized by others.

Second, interactions between professors and students, policemen and traffic violators, or between designers and designated representatives of their corporate clients do not take place between individuals who speak for themselves but between the institutional roles they play, confining accountability to the normative roles they perform.

Third, many social gatherings 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 represent the institution that has paid for the recorded answers, and psychological tests are designed to reveal test subjects' qualifications for something of interest to an institution. Board meetings are structured to bring about decisions in the interests of various departments. Artists may see the need to impress their gallery regarding the value of their creations. Such interactions tend not to last beyond achieving their goal. It may happen, of course, for dialogical moments to occur even in highly structured situations, among co-workers, in mentor-student consultations, or during psychotherapy. But moments of genuine conversations are mostly irrelevant to the discourse that brought these people together.

Fourth, some discourse analysts, prominently Michael Foucault,⁷ invoke physical metaphors of power to explain what fuels discursive actions in society. I side with Gregory Bateson who insisted that the use of physical metaphors in explanations of social interactions is misguided.⁸ In opposition to Foucault's conceptions, I am suggesting that dialogical inequalities rarely arise from unequal control of physical powers, but from submission, the unwillingness to question those who claim to speak from the position of authority. Admittedly, holding established authorities accountable for what they say or do may not be easy, especially when they refuse to

⁶ François Cooren. *Action and Agency in Dialogue: Passion, Incarnation, and Ventriloquism*. (Amsterdam: John Benjamins, 2014).

⁷ Michael Foucault. *The Archeology of Knowledge*, trans. A.M.S. Sheridan. (New York: Pantheon Books, 1972).

⁸ Gregory Bateson. *Steps to an Ecology of Mind*. (Chicago, IL: University of Chicago Press, 1972).

be responsive to such requests. Clearly, authorities, social hierarchies of superiors and subordinates are constructed, enacted, and maintained in language, not explainable by the laws of physics. Similarly troublesome is Bruno Latour's Actor Network Theory,⁹ which fails to distinguish between linguistically evident human agency and physical causes. I certainly do take material considerations seriously,¹⁰ whether in the form of the above-mentioned constraints of the media of communication, legal confinements, or violence. The mechanical properties of all technological artifacts undoubtedly constrain some human abilities while extending others but they are neither actors nor drivers. Physical phenomena are indifferent to language. For example, everything that happens before pulling the trigger of a loaded weapon is social. It involves the articulation of threats, the experience of fears of the consequences of non-compliance, which are linguistic interactions. Only after a bullet has left a gun does causality explain its trajectory and no argument can change its course.¹¹ Physical explanations may well enter human interactions mainly after language has run its course.

The above examples suggest that experiencing constraints on genuine conversations generates numerous forms of social situations whose decreasing dialogical freedom suggests a continuum, on which one can locate the conception of communication as control and discourses between the extremes of genuine conversation the routine, repetitive, and mindless interactions of mechanical devices, computational algorithms, including violence the outcome of which is the product of unequal physical forces. To be clear, computational realities are always designed, i.e., they are of human origin, but their characteristics are unlike human interaction. Submission of one's human agency to algorithms, increasingly demanded in contemporary society, requires critical examination. Figure 1 depicts this continuum.¹²

Genuine Conversation → Communication → Discourse → Computation

Figure 1

There is literature on social forms that curb possibilities and those that expand them. David Graeber contrasts the effects of working in hierarchical versus in heterarchical forms of organizations in these terms.¹³

Discourses

The common view of language is that it is *about* phenomena outside of it, phenomena that exist independent of how we talk of them. Especially in reference to conversations, for me, language

⁹ Bruno Latour. *Reassembling the Social: An Introduction to Actor-Network-Theory*. (New York: Oxford University Press, 2005).

¹⁰ Klaus Krippendorff. "Discourse and the Materiality of its Artifacts," in *Matters of Communication: Political, Cultural, and Technological Challenges to Communication Theorizing*, edited by T. R. Kuhn. (New York: Hampton Press, 2011: 23-46).

¹¹ Klaus Krippendorff. "Undoing Power," *Critical Studies in Mass Communication* 12, no. 2 (1995: 101-132).

¹² Klaus Krippendorff. "Discourse as Systematically Constrained Conversation," in his *On Communicating: Otherness, Meaning, and Information*, ed. F. Bermejo. (New York: Routledge, 2009a: 217-234).

¹³ David Graeber. *Possibilities: Essays on Hierarchy, Rebellion, and Desire*. (Chico, CA: AK Press, 2007).

is not just representational but also performative and constitutive of particular concerns. In my definition, discourses:

- Manifest themselves materially in a body of *discourse-specific artifacts* they characteristically produce and attend to. Artifacts may consist of texts, theories, social practices, products, buildings, technologies, including networks of communication – everything that remains after their originators have left.
- Are *kept alive by a discourse community* whose members use specialized vocabularies that give them a sense of understanding each other, facilitate working 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 published style manuals, requiring references to canonical texts, using standardizing methods for inquiry and constructing and normatively evaluating their artifacts. Discourses may be reinforced by specialized journals which inform their participants of relevant developments. Discourses are taught educational tracks, leading to certifications, titles and offices that preserve the stability and coherence of a discourse, generally beyond the lifespan of its contributors.
- *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 their discourse community from invasion by alien discourses.
- *Justify themselves to their stakeholders* regarding the artifacts they produce, the methods used to create them, and how members are recruited to their discourse communities. 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 institutionalized constraints imposed by the discourses entered. Their institutions are regularly assembled and disassembled.

My conception of discourse extends Bakhtinian speech genres¹⁴ by adding references to the discourse communities that practice them, the institutions that uphold them, and the realities they bring forth within self-maintained boundaries. Enacting discourses results in what sociologists investigate as social movements – if they are spontaneous – and social organizations – if their institutionalized practices extend beyond the life span of their members. While discourses tend to be practiced in mutually exclusive communities, their exclusivity does not hinder individuals from crossing their boundaries if they satisfy the qualifications of the discourse communities into which they cross. Policemen can be musicians, medical doctors can be soccer players, and designers can be politicians at different times.

¹⁴ 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).

Before discussing the particulars of the design discourse, let me illustrate the above by comparing three well-known discourses: the discourse of the natural sciences, the judicial discourse and public discourse.

The *discourse of the natural sciences* employs language as descriptive of observable phenomena, allegedly excluding human involvement. Physicists, for example, create theories of nature plus the methods and instruments of generating analyzable data in support of their theories. Physics is instituted in university education, practiced in laboratories and published, which keeps the community members on track. To become a physicist presupposes rigorous education and certification by the community of physicists, which assures subsequent compliance with established rules of evidence for what constitutes acceptable contributions to the discourse of physics. By characterizing the results of their work as “findings” and verified theories as “laws of nature” physicists presume that the objects of their interest exist independent of and prior to their scientific attention and are governed by laws that physicists need to “discover.” By insisting on “finding or discovering the laws of nature,” physicists fail to see their theories as the artifacts of their discourse. I am suggesting that the artifacts of physics are created in the discourse community of physicists, limited only by what nature affords physicists to do with it.

The *judicial discourse* is practiced in courts of law and lawyers’ offices. Judges, lawyers, clerks and members of juries have to pass specialized tests to play their role in legal proceedings geared to establish whether a crime has been committed and who the perpetrators or victims are. The artifacts of the judicial discourse consist of the consequences of decisions consistent with established laws that render accused individuals as criminals, send them into prison, force them to pay fines, or declare them innocent. Incidentally, when physicists appear in court they become subject of established laws, not to the laws that physicists seek to justify. Conversely, the legal system has nothing to say of how the discourse of physics proceeds. These two discourses exemplify the constitutive incommensurability of discourses.

Public discourse embraces the concerns shared by any number of people who are able to discuss them in public places – in bars and sidewalk cafes, on streets, at sports events, hearings, and demonstrations – always under the watchful eyes of bystanders. Public discourse constitutes what Jürgen Habermas calls the public sphere.¹⁵ Its discourse is open to all who speak a common language and are willing to be held publically accountable for what they say and do. Its discourse community may not be as institutionalized as the scientific and judicial discourse communities are, however, public discourse is informed by a variety of institutionalized mechanisms: popular literature, the mass and social media, and governments that respond to public opinion polls and voting on candidates for political offices. The boundary of public discourse excludes highly specialized professional discourses, which only a few can understand, as well as what is considered private matter.

Among the artifacts of public discourse are celebrities, fashions, social prejudices, the meanings of cultural objects, and demonstrations. Speaking publically of products, neighborhoods, or politicians attaches meanings to them that profoundly affect how people act on them. There are many examples where perfectly functional products failed to remain in use as a result of stories that described them as ugly, inefficient, unhealthy, unreliable, or dangerous.

¹⁵ 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).

The validity of such characterizations may not even come to a test because attributions easily initiate self-fulfilling prejudices. Who wants to be seen driving what everyone calls a lemon?

All cultural artifacts can afford a multiplicity of meanings. A chair might be used for sitting, but also for stepping up on it, keeping something handy, changing the diaper of a baby, displaying the wealth of its owner, or fetching a price in a furniture store. All uses of artifacts follow their meanings and are constrained by their contexts. On a construction site, a brick becomes part of a wall. In a garden, it may define the border of a flower bed. In a living room it could serve as a book end. During a violent encounter it may become a deadly weapon. Virtually all artifacts enable multiple uses: typical, unconventional, and unimagined ones. This multiplicity is loosely related to Bakhtin's conception of polyphony. However, it would be hard to imagine that technological artifacts have voices, as Bakhtin's metaphor encourages us to read texts. Human interfaces with artifacts offer their users context-dependent choices of what to do with them. Typically, *interfaces are prolonged by intrinsically or extrinsically motivated interactions*, that is, actions followed by responses, leading to 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 need to recognize that artifacts acquire not only a variety of meanings, but also possess *affordances*,¹⁶ 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 in question or cause breakdowns* in Martin Heidegger's sense.¹⁷ What breaks down, however, is not the artifact – although this could happen as well – but users' interactions that follow the unafforded meanings which users attribute to the artifacts they face.

Enacting the meanings of cultural artifacts into interfaces deserves some comparisons with conversation and dialogue. Computational devices, for example, tend to provide their users numerous options to act and then display the consequences of their actions on a screen. Yet, because algorithms are context-independent and deterministic, they cannot comprehend what humans are up to. For their users, the meanings of computer icons are constructed from experiencing what happens after clicking on them, effectively following Wittgenstein's conception of the meanings of utterances as depending on the responses they elicit.¹⁸

Another commonality concerns the inaccessibility of the internal makeup of what computer users are facing. The design of a computer's architecture is technology-centered and involves highly specialized discourses that ordinary users tend not to understand and do not care to become familiar with – as long as they can interface with the device. This is analogous to the inability of humans to observe what is going on inside someone else's mind. In conversations we may be able to inquire how our partners understood what was said. However, even their answers do not reveal anything about the neuronal processes in their brains. Intentions and understandings are constructed from what people say to each other. Their attribution to

¹⁶ James Gibson. *The Ecological Approach to Visual Perception*. (Boston MA: Houghton Mifflin, 1979: 127-135).

¹⁷ Hubert L. Dreyfus. *Being in the World; A commentary on Heidegger's 'Being and Time,' Division I*. (Cambridge, MA: MIT Press, 1992: 70-83).

¹⁸ Ludwig Wittgenstein. *Philosophical Investigations*, trans. G. E. M. Anscombe. (New York: Macmillan, 1958).

individual participants always arises in the public discourse. This includes cognitive explanations which may not have anything to do with how the human brain works. Likewise, at least for ordinary users, computer architecture is immune to how they speak of it and divorced from the conceptions of what it takes to interface with it. We cannot ask how a computer does its job nor hold it accountable for what it does.

Design Discourse

I outlined above what discourses have in common. Professional design discourse is no exception. It has unique features but is also vulnerable to colonization by other discourses. Designers need to be aware of the strengths of their own discourse and resist surrendering it to other discourses' interests. The latter happens, for example, when accepting economic definitions of design as adding value to products, engineering definitions as providing technological solutions to social problems, or marketing definitions as a way to maximize their markets. Let me sketch the unique features of design discourse in broad strokes by way of contrast to the above.

Its Epistemological Commitment

Whereas scientific discourses aim to understand and theorize what exists, design discourse aims to propose something new, unprecedented, not imaginable by others, and certainly not presently observable. A proposal may be built on what currently exists but cannot afford remaining stuck in present realities. Nor can it be limited to what everybody prefers. It has to deal with possibilities for future realizations.

The awareness of the role of language in deliberating possibilities is crucial. Already in 1964, Horst Rittel equated design with planning and suggested that designers have to make plausible arguments for their proposals if innovation is their aim.¹⁹ Indeed, a future is not observable. It may appear in narratives, sketches, plans for action, and prototypes that have a chance to be converted into something real. In his *The Sciences of the Artificial*, Herbert Simon²⁰ 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. Both Rittel and Simon's formulations have a rarely recognized 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*, a treatise of how civilizations emerge.²¹ The idea of making the world we know is epistemologically irreconcilable with the conviction of most natural sciences to describe the world as is. In my *Semantic Turn*, I extended these notions to include the meanings artifacts that acquire in language and actual use.²²

Its Essential Practice

¹⁹ Jean-Pierre Protzen and David J. Harris. *The Universe of Design: Horst Rittel's Theories of Design and Planning*. (New York: Routledge, 2010: 48-52).

²⁰ Herbert A. Simon. *The Sciences of the Artificial*. (Cambridge, MA: MIT Press, 1969: 58-62).

²¹ Giambattista Vico. *The New Science of Giambattista Vico, 3rd edition*. Trans. T. G. Bergin and M. H. Fisch. (Ithaca, NY: Cornell University Press, 1744/1968).

²² Klaus Krippendorff. *The Semantic Turn; A New Foundation for Design*. (Boca Raton, FL, London, New York: Taylor & Francis CRC Press, 2006).

The awareness of the vocabularies and ways of articulating possibilities that make up a design discourse is important because it is what can embolden designers to be fearlessly critical of knowledge claims of what cannot be done, of what everyone takes for granted, of widespread taboos, institutional interests in material culture, and scientific determinisms. The ability of humans to fly had been dismissed as a Greek myth until the Wright brothers dared to make it real. I've read early scientific reports that conclusively found steel wheels on steel tracks to be unable to move trains. Steve Job and Steve Wozniak's effort to develop a personal computer was considered crazy and useless until it started a cultural revolution.

Possibilities do not exist in nature, nor are they exclusive of human imaginations. They emerge in human interactions. Conversations grant their participants spaces to respond, encourage novel articulations, reward their elaborations, expansions, and evaluations or leave the uninteresting alone with their participants' consent. Conversations never repeat themselves; they always evolve into something that neither participant anticipated. This is why conversation is an essential practice that design discourse must embrace. Indeed, in practice, most design processes take place in multi-disciplinary teams whose participants respect each other's unlike backgrounds and competencies. A single designer rarely ever has the knowledge of everything that goes into a design. To be respected in such collaborations, designers cannot insist on possessing artistic sensitivities or claim to be design thinkers, they have to plausibly argue for possibilities that other participants with other expertise could not imagine but value.

In design offices, conversations may not be truly genuine, but have to come close to them. Brainstorming is a loosely structured conversation involving ordinary people, and participatory design invites prospective users in design processes. However, both forms of interactions are limited to simple designs. The idea of a design genius, of the conception of communication as control, and of being disciplined is antithetical to design.²³

Its Artifacts

It is common to say that designers create useful artifacts. This characterization may have been valid for craftsmen prior to massive industrial productions. Today, this conception is no longer valid. Pursuing it nevertheless hides from view what designers need to do. Designs that leave a design office are *proposals* in the form of drawings, videos, prototypes, computer simulations, or written reports of preparatory work done. Their materiality is unlike what a proposal seeks to accomplish. The artifacts of a design discourse have to propose something not yet in existence – an improvement, an innovation, something that could not be predicted from what exists and would not come about naturally. Proposals are communications to be read, interpreted, and enacted, not objects of use.

Whether a design, so conceived, bears the projected fruits is rarely fully knowable at the time of its proposition. As communications, the artifacts of a design discourse need to possess everything needed to succeed. However, the empirical proof of their success resides outside its

²³ Klaus Krippendorff. Design, an Undisciplinable Profession, in G. Joost, K. Bredies, M. Christensen, F. Conradi & A. Unteidig (Eds.). *Design as Research. Positions, Arguments, Perspectives*. (Basel: Birkhäuser Verlag/De Gruyter, 2016: 124, 197-206).

designer's control, namely in the hands of those who have a stake in the design; that is, in the hands of its stakeholders.

Its stakeholders

By definition, its stakeholders are able to articulate their stake in a design, possess the institutional, economic, and material resources to bring a design to fruition, and have the communicational ability to rally support or oppose it. Stakeholders may articulate their convictions publically or privately, are able to cooperate in their efforts with others. Whether designed artifacts end up in the public sphere depends on the ability of their designers to anticipate the obstacles their designs might face and convince their stakeholders of the benefits of what they are proposing. It is an axiom of design discourse:

The success or failure of a design is decided by its stakeholders.

Stakeholders form networks of diverse interests regarding designed artifacts. Stakeholders may include the board members of a corporation concerned with whether a design fits the image of their corporation. The voices of bankers who consider investing in its production surely play a role. Engineers may be part of this network. They could be tasked to work out the technical details for the artifact to be produced and work reliably. Government regulators, marketing researchers, advertisers, distributors, sellers, buyers, and users may all play albeit different roles, and following what designers may have had in mind, its critics, suppliers of needed resources, and advocacy groups concerned about the political, economic, or ecological implications of a design.

The simplistic concern with so-called end users, user-centered design, follows from the conception of communication as control, privileging designers' intentions, assuming the intermediaries to be on board and omitting what succeeds the intended use. Sustainable design at least recognizes ecological concerns, but this does not do justice to the sequence of stages which a design has to pass.

It cannot be expected that all stakeholders follow a design literally, nor do they need to know what designers have proposed. In the process of realizing a design, a designer's artifact tends to be decomposed into sequentially meaningful representations in terms of which individual stakeholders can make their contributions or attract new stakeholders willing to invest in its eventual realization. Convincing presentations by designers may lead to contracts, spreadsheets, production drawings, advertising plans, and displays. In the hands of users, the resulting artifacts may have to work with other artifacts, be connected with appropriate resources, be repairable, and responsibly disposable.

What motivates stakeholders to collaborate is not so very unlike what motivates participants of conversations to stay involved: a sense of being able to constructively contribute their resources even if the benefits of their participation are deferred. I suggested that design is intrinsically motivating. Stakeholders are not robots. Bankers are motivated by interests earned from their investment, engineers by finding a clever way of manufacturing, marketing researchers by locating valuable buyers, users by hoping to improve their lives, and environmental activists by seeing that their conception of nature is protected. During the industrial period, designers wrote specifications for forms and colors that subordinates had to follow. In today's world:

*To motivate its stakeholders, the process of design needs to be outsourced at least in part to those who claim a stake in it.*²⁴

Designs that do not offer their stakeholders spaces to contribute within their abilities, or prevent them from creating something even better than proposed tend not to go very far. It is a mistake to ignore intrinsic motivations.

Inquiries Indigenous to Design

Although designers tend to know their own community by what its members do, that community has been less successful in instituting its essential design practices and gaining the high esteem enjoyed by scientists, engineers, business owners, and marketing experts with whom they may have to work. Many universities offer design degrees, but they are rarely required to practice design. There are plenty of popular design magazines but hardly any texts detailing reproducible design methodologies. Computer-aided design has standardized some design practices but only for its own convenience. There are professional associations of designers that organize conferences on specialized topics. In efforts to improve the public standing of the design profession, there have been efforts to model design discourse on the discourse of the sciences, calling for design research.²⁵

Research, taken literally, is re-search, repeated search for patterns in data with the aim of understanding them. However, there are no data of future happenings. Possibilities are arguable but not observable. Data-based design research, literally conceived, prevents designers from addressing possible futures. It confines their contributions to making minor adjustment to predicted trends.

Instead, I am suggesting three coordinated lines of inquiry with the aim of improving the theories, methods and practices of design discourse. First are methods to generate possibilities, evaluate their virtues, and translate the results into compelling arguments that justify designs to those who care. Second are methods to tailor designs such that they sail through or generate constructive stakeholder networks to desirable futures, and third is research aimed at preserving the larger aim of design discourse to enhance the viability of the very culture in which design is practiced, so-called post-design research.

Preparatory Inquiries

Regarding the first line of inquiry, it is important to *search for what is presently variable*, i.e., what can be varied, intervened with, and changed for the better. Invariances that scientific research seeks to theorize and generalize, i.e., what its theories describe as unalterably existing, have to be approached with considerable skepticism and be systematically questioned. It means searching for unexamined spaces, uncertainties, indeterminacies, contradictions, and loose ends.

Related to this research objective is taking advantage of the fact that most culturally meaningful artifacts emerge by *dissecting configurations* of technologies, materials, and practices and *assembling them in novel ways*. For example, PCs emerged by combining independently known typewriter keyboards and television screens with computing devices.

²⁴ Klaus Krippendorff. *The Semantic Turn*; Ibid. (2006: 74)

²⁵ Ken Friedman, "Theory construction in design research: criteria: approaches, and methods," *Design Studies*, 24, no. 6 (2003), 507-522.

Simon articulated the limitations of computing optimum solutions to problems and listed several search strategies,²⁶ most of them being already implicit in conversations, nowadays vastly expanded by searching the Internet and large data bases. After all, language is a combinatorial system that allows the formation of an infinite number of expressions, in practice limited to those meaningful to its speakers.

Simon was fixated on technological problems. Focus groups, concerned with what laypersons can imagine and judge, constitute the other extreme. Between the two extremes is ordinary language use. Given that people are not always aware of what they are lacking and unable to articulate their hidden desires, an important method of design research is to find out what complaints or worries people have, what makes them afraid, and what inconveniences or bothers them. Surveying such situations can inspire designers to make immediately meaningful differences, not only in the lives of ordinary people but also in those of the stakeholders of a design. Such examinations call for a new kind of ethnography, *an ethnography* not of what is, but of *commonly inconceivable possibilities* of improvements, replacements, and innovations.²⁷

Inquiries into the Basis of Understanding and Motivation

There is no point in proposing designs that nobody else can handle. Not only do they need to be understood by potential stakeholders, they must also motivate their communities to become involved. Understanding something is rarely an either/or proposition. Understanding expands with exposure, involvement, seeing the benefits that others gain from using a design, but above all, with the vocabularies combinatorially available. The second line of inquiry of design research concerns the motivations to be built into a design so as to make it understandable and desirable. To gain insights into what could persuade stakeholders to get involved in something new may not be easy. The above mentioned ethnography of possibilities is one way to access deficiencies that people would be eager to escape from. However, a content analysis²⁸ of potential stakeholders' vocabularies for newness, manifest in their attention to unusual movies, science fiction, myths and mythologies can be turned into evidence for potential stakeholders' desire to move into particular futures. Studies of the *vocabularies and narratives of the fictional domains of public discourse* offer designers valuable hints for what a design should possess and what arguments could justify the launching of a design that creates a network of supportive stakeholders.

One motivation already mentioned but often overlooked is intrinsic to interfacing with designed artifacts. Artifacts that can be transformed by their users, reconfigured, programmed and played with, like musical instruments, are good candidates that motivate stakeholders intrinsically, provided their combinatorial complexities can be handled. To cope with these complexities, interface designers make use of metaphors and analogies from familiar domains of experiences. Research into their portability can enhance motivations for becoming engaged with a design.

²⁶ Herbert A. Simon, *The Sciences of the Artificial*. Op. cit. pages 62, ff.

²⁷ 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.

²⁸ Klaus Krippendorff. *Content Analysis; An Introduction to Its Methodology 4th Edition*. (Thousand Oaks, CA: Sage, 2019).

Inquiries into the features that motivate engagements with a design have to acknowledge not only that there are major cultural and linguistic differences among potential stakeholders but also that artifacts tend to afford far more than what their users can imagine. Designers cannot prevent their designs from acquiring unintended meanings and uses but may be able to build constraints into their affordances that minimize uses that harm communities outside their expressed concerns – like disabling the opening of medicine containers by children. The advent of personal computers has changed our society in generally unanticipated ways. Futurists can write only of imaginable consequences. A sense of the largely unimaginable consequences of designs can be gleaned from writers with devious intents. For example, terrorist websites promoted the idea of using trucks as weapons to kill a large number of innocent people an idea still unimaginable to most people, and one that designers may have to prevent by constraining their affordances. To align design with the constantly moving understanding and motivations of potential stakeholders is facilitated by inquiries into the writings of influential leaders of public discourse.

Post-Design Inquiries

Regretfully, the focus of most design research stops at the point at which a design leaves its design office, largely because designers are paid for what they deliver to their clients and what their stakeholders make of it is not controllable by them. Expressed ecological concerns may well be the only exception. However, this shortsightedness prevents designers from learning from and being held accountable for the larger consequences of their work. Design discourse, mastery of which tends to give professional designers their reputation, advances mainly when its methods are systematically evaluated and improved in subsequent iterations. To contribute to the discourse of the community of designers, the successes and failures of design theories and methods should not be measured on selected target communities but in terms of the *contributions that designers make to the viability of the very culture in which they collaborate with their stakeholders.*

Design discourse has to be ethical. A design that shifts the competitive advantage from one manufacturer to another is not to be confused with irreparably harming a community, providing manufacturers a means to hold communities hostage, or taking the whole culture on a track to self-destruction. Inquiries into such consequences will grant design discourse the respect it deserves.