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DISCOURSE AND THE MATERIALITY OF ITS ARTIFACTS

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I intend to paint a picture of language larger than established linguistics, conversation, discourse, and content analysis is using to begin embracing the material consequences of language use.

Why do I think this is not provided by the approaches to language just mentioned?

Unfortunately, although most dictionary entries define *linguistics* as THE scientific study of natural language, linguists have limited their attention to something altogether unnatural. Ferdinand de Saussure (1857–1913), considered the father of 20th-century linguistics and one of the founders of semiotics, limited the object of linguistic inquiry to: *la langue* (French, meaning "language"), leaving *la parole* (meaning "speech") to other disciplines. Since the posthumous publication of his *Course in General Linguistics* (1959), followed by Noam Chomsky's (1957) famous *Syntactic Structures*, linguistics are describing language as an autonomous system of symbols, separate from all complications evident in the great many human uses of language. That system has a combinable vocabulary and is conceived of as following morphological, phonetic, and grammatical rules for forming words and well-formed sentences.

This object of linguistic inquiry is given extraordinary privileges in the life of the speakers of a language. The most abstract of the rules that linguists construct are assumed to be genetically wired into the speakers' brain (a universal language), which is supposed to enable them to learn the specific rules of particular natural languages. Linguistics acknowledges that individual speakers of a language may not fully comply with these rules—how could nonlinguists know of them?—generating grammatically incomplete sentences and idiosyncratic expressions in situation-specific ways. However, Linguists are not interested in such apparently unruly variations.

The interest of linguistics stops at the syntactical structures of sentences, beyond which grammatical rules do not apply. Although most naturally occurring articulations are composed of more than one sentence and there always are good reasons for why sentences are strung together, linguists consider them related by logical conjunctions and therefore of little analytical interest.

Important too is the fact that linguistic data and their analysis occur in writing and where writing systems are not available, in the form of transcripts that record sounds into the language of a linguist. Without writing, linguistics would not be possible, yet the dependence of linguistics on writing is rarely acknowledged nor do linguists study the discourse of linguistics as part of their inquiries. One should be reminded that, when speaking a language, we do not utter sentences, we do not mention punctuations, we do not distinguish between capital and lowercase

characters, all of which are the artifacts of conventional writing systems and very much culturally and historically conditioned. A finite lexicon of distinct verbalizations does not exist either.

Valentin Vološinov (1986), who called this linguistic approach to studying language "abstract-objectivist," suggested that the legitimacy of the linguistic enterprise is due to three extralinguistic circumstances. First, the construction of its object of analysis—an autonomous system of linguistic forms—enabled the discipline to separate its object of attention from all the complexities of speaking and therefore immunized itself to challenges by disciplines addressing these, by psychologists, sociologists or anthropologists, for instance. Apparently, the object of linguistics is constructed for the convenience of linguists studying it. Second, the general rules of grammar it formulated benefitted the simultaneous rise of compulsory education, which called for standardized textbooks for all speakers of a national language. Third, it helped to regulate communication in large functional bureaucracies, ensuring their tremendous growth during the last century. Thus, linguistics is far from sociologically or politically neutral. It supports hierarchical governing structures and dismisses everyday talk as inferior, largely ungrammatical, and not conforming to linguistic theory.

Conversation analysis fundamentally deviates from the abstract objectivism of contemporary linguistics by acknowledging individual speakers' interactive involvement with each other. The units of analysis are not sentences, but utterances, distinguished by speakers themselves, taking turns, making arguments, singling them out for comments, or repairing problems of interaction. Philosophically, conversation analysis goes back to Harold Garfinkel's (1967) project of ethnomethodology, Erving Goffman's (1959) dramaturgical approach to interaction, and Harvey Sacks' (1992) detailed analyses of transcripts of verbal interactions in natural settings. Charles Goodwin (1981) extended the reliance of conversation analysis on transcripts of verbal interactions by including video recordings of nonverbal behavioral correlates of conversations, adding such analytical categories as gaze, gestures, false starts, and moves to gain the floor. He could explain a good part of incomplete sentences.

Conversation analysis has no place for abstract grammatical rules as it seeks to explain its transcripts from reading within them, ascertaining rules of interaction among speakers—speech acts, turn taking, adjacency pairs, and the like. However, its explanations remain tied to records of naturally occurring talk. Its transcripts rarely contain evidence for what conversations accomplish materially.

Discourse analysis is a general term for a variety of approaches to analyzing naturally occurring text and talk (e.g., Schiffrin, Tannen, & Hamilton, 2001; Stubbs, 1983). Dictionaries define discourse as a large body of text or prolonged monologue. Essentially, discourse analysis seeks to explain what makes sequences of sentences, propositions, and utterances meaningful and coherent. Leaving grammar to linguists, discourse analysts account for a body of writing in terms of rhetorical strategies, styles, and genres, to which critical discourse analysis adds the existence of power relations, the maintenance of hegemonic structures, racism, inequalities, and ideologies in the environment in which the analyzed body of text was found. For example, Michel Foucault (1969/2002) studied how the emerging discourse of 19th-century psychiatry brought forth the concept of the unconscious. For Norman Fairclough (1999), discourse is a social practice that reveals how social and political domination or power relations are reproduced. He proposes three dimensions of discourse: the text; its production, distribution, and consumption practices; and the events that relate to or enter texts. Teun van Dijk (1987, 1988,

1997) treats mass communication as discourse to reveal prejudices and ideologies as explanatory frames to understand how groups represent each other across texts. Margaret Wetherell and Jonathan Potter (1992) too analyze the language of racism that permeates a body of writing. These conceptions of discourse have also entered cognitive psychology (Edwards, 1979; Potter, 1996; Potter & Wetherell, 1987), which pursues the construction of individually significant realities. Although some discourse analysts take texts to be a response to other texts, most leave the interactivity of utterances to conversation analysis and avoid references to individual speakers.

Obviously, discourse analysis goes beyond the objects of linguistic inquiry by constructing explanatory accounts for larger bodies of writing, drawing its explanations from the social context in which these bodies occur. Discourse analysis is an analytical method, at home mainly in the humanities and social sciences and, unlike linguistics, not a specialized discipline. Any analysis of discourse is of necessity an interdisciplinary venture.

The aim of *content analysis* is to make inferences from large bodies of text to specific features of a chosen context of their use (Krippendorff, 2004). In content analysis, "text" is a general category for everything that has the potential of being meaningful to someone. The texts it analyzes are mostly published and include images, interview transcripts, electronic exchanges, but also cultural artifacts. Usually, but by no means exclusively, content analysts categorize small units of text and develop statistical accounts of these units, revealing distributional patterns that ordinary readers may not notice and draw a variety of inferences from them to producers, audiences, and cultural contexts in which the analyzed texts did or could participate. These inferences may well include material conditions—the outbreak of war, appropriate therapeutic treatments of speakers, voting or health behavior, the identity of unnamed authors, historical facts—but can infer them only when the relationship between analyzed texts and these contingencies are known or surmised. Because its units of analysis are numerous but small, content analysis may benefit from linguistic categories but has no ambition to conceptualize language on its own.

RECONCEIVING DISCOURSE

Whereas dictionary definitions of discourse tend to refer to a structured collection of meaningful texts larger than sentences, I conceive discourse as systematically constrained conversation (Krippendorff, 2009a, 2009b). From conversation analysis I am acknowledging that discourses involve competent speakers, writers, and actors who communicate with one another within and across their respective discourse communities.

Moreover, and perhaps the most important feature of conversations that I recognize in discourses as well, is their self-organization. Participants manage their own affairs, decide what to talk of, with whom, how to proceed, and what to do with what transpired, while retaining a sense of their own identity. Discourses surely are not as ungovernable and freewheeling as unproblematic conversations. In discourses not everything can be said to everyone. Its participants may pursue common purposes, comply with their own standards or ideals, and hold each other accountable for conforming to them. Standards impose constraints and ensure some regularity. These regularities are neither universal nor imported from outside a discourse but consensually developed from within. Hence, discourses constrain *themselves*.

The discourses of interest to me are as culturally powerful as scientific discourses, such as linguistics, biology, physics, and psychotherapy, and include practical discourses, such as medicine and engineering—much as Robert Craig (1989) sees the field of communication as a practical discipline—and the least organized public discourse. Discourses could be described as expanded Wittgensteinian (1967) language games in which speakers, not just those co-present, consent to conduct themselves according to rules of their own making, as in delivering a sermon, writing in compliance with the APA stylebook, using specialized professional terminologies, adopting a common focus of attention, or allowing one person to exert power over others—all of which amount to willingly suspending the performance of otherwise conversationally possible speech acts (Krippendorff, 2009b).

Although I would like to see discourse analyzed in the microcosm of specific interactions in the tradition of conversation analysis, I am hesitant to privilege the role of superior observers, as linguists do and as manifest in critical discourse analysts' reading of bodies of text, inferring power relations and prejudices at play in them. Self-organizing systems cannot be described from their outside as experienced by their participants within them. This is a fundamental epistemological conundrum. Therefore, in this chapter, I defer judgments on the meanings of particular discursive interactions to those involved and confine myself to develop conceptions that leave members of discourse communities sufficient space to determine their own ways. This amounts to developing a framework, accounting for the systematic constraints on interactions, rather than a detailed description of what happens in ongoing interactions.

In the following, I describe five constitutive components of discourse. They are intended to lead to a new understanding of the social use of language and open the gate to new kinds of research questions.

FIVE CONSTITUENT COMPONENTS OF DISCOURSE

As suggested, the focus of discourse analysts is on a body of text, interpreted in psychological, sociological, or political terms, in any case from the disciplinary perspective of an outsider analyst. Indeed, texts are convenient data for analysis. They must be read, however, by members of a discourse community, not just by discourse analysts. I am suggesting that textual matter is that component of discourse through which it surfaces for analysts to see. Textual matter is important but hides how it comes about. Therefore, I suggest (Krippendorff, 2009a, pp. 217–234):

(One)
Discourses manifest themselves in the artifacts they produce,
inclusive of their textual matter

Textual matter can be said to be the literal heritage of a discourse. "Matter" points to its enduring material base, which enables the members of a discourse community to read it repeatedly and share it among each other with some degree of reliability (Taylor et al. 1996). Rereading is possible only when textual matter persists in time, which is a property of the medium—stone, paper, electronic media—that carries a text into its future. Textual matter includes not just literary works but also images, records of any kind, e.g. transcripts, but also technological artifacts—all objects created for subsequent use. The discourse of art history orders and interprets works of art, organizes them in commentaries and exhibitions, and

reproduces them in publications. The discourse of design includes exemplars of good design in museums, private collections, publications, handbooks, and product specifications. The discourse of physics includes reports of experiments, the data they generated, theories said to be supported by them, publications in the form of journal articles, critical reviews, textbooks that establish procedural norms, as well as records of debates, for example, at academic meetings. Textual matter typically survives the lifespan of the members of its discourse community, but not necessarily its reading.

Texts and images are not natural. They do not grow on trees. They are the tangible artifacts that a discourse community constructs, recognizes in their own doing, and continues to interpret. Recognizing something as text is not enough. I think I know some Chinese characters when I see them (and might well confuse them with those used in Korea or Japan), but I would not know how to arrange them in ways that would make sense to speakers of Chinese. The dual ability of writing and reading meaningful texts, of producing and using the artifacts within a discourse community, requires membership in that community. Therefore, I am suggesting that:

(Two)
Discourses are kept alive within communities of their practitioners

It is always the members of a discourse community who (re)write, (re)read, (re)build, (re)produce, (re)search, (re)analyze, and (re)articulate or (re)use the artifacts they are constructing in their own terms. Just as a language dies with its last speaker, so does a discourse die with the disappearance of its discourse community. This is not to say that the artifacts of one discourse could not be appropriated by another, for instance, the artifacts of ancient Troy are now in museums and part of the textual matter of archeology, or the artifacts of our own culture's past, say medieval weapons, may well become part of someone's collection and be reexamined by historians who cannot but view them from a radically different perspective than that of the original users (Krippendorff, 2006b). In passing artifacts from one discourse to another, it is their materiality that is passed on to the receiving discourse community, not their use or what they meant to the source. When we speak of the artifacts of other discourse communities or read them as their texts, we may try to understand them in their terms, but it is always us who do the reading, conceptualizing, and using. Artifacts always are the discursive constructions of a discourse community, not necessarily, in fact rarely the same for everybody.

What the members of a discourse community share are not their interpretations of some objectively present matter, but their consensual coordinations (Maturana & Varela, 1987) vis-á-vis their artifacts, also known as co-orientations (Newcomb, 1953) and language games (Wittgenstein, 1967). Consensual coordination is achieved when those involved speak of and act on what they jointly face in mutually affirmed understanding by all or most of those present. Affirming one's understanding hardly implies sharing conceptions. We never really know what others think, only what they tell us about their conceptions of what we jointly attend to or do. What distinguishes one discourse community from another is the achievement of distinct forms of consensual coordination, in the process of which artifacts arise out of matter and become part of a community.

Although language is almost always involved, in conversations, participants speak for themselves while the members of discourse communities speak and act as their members. The latter puts into play discourse-specific vocabularies, competencies, and authorities, the enactment

of which is assumed acceptable to other not necessarily present members of that community, hence speaking for that community.

As suggested, discourse communities are committed to keep the artifacts they produce meaningful among their members. Scientific discourse is concerned with the truth of its textual matter. But the distinction between truth and falsehood is made in the language of science and by scientists who apply the criteria of their discourse community to their reading of textual matter, accepting it as factual data, reasonable hypotheses, scientifically proven theories and distinguish them from false claims or matter irrelevant to science—all of these readings take place within the discourse of science. The discourse of physics, for example, produces textual matter that is read as representing a coherent universe, a single version of the world, causally determined, consistent, and without human agency. The discourse of biology constructs living systems in its texts. Mainstream linguistics, as already suggested, constructs a coherent and rule-governed system of symbols. The discourse of psychiatry constructs patients who can be treated by the means available to psychiatrists. The discourse of engineering constructs mechanical artifacts via drawings, calculations, and specifications, relying on textbooks, building codes, and records of the material properties available to engineers. Evidently, all artifacts have discourse-specific meanings.

The totality of artifacts constructed by a discourse community constitutes that discourse's reality. From within a discourse, there is not much else to be known of outside it. For physicists, what biologists and psychiatrists do is of no professional interest, and engineering is downgraded as merely applied, unable to contribute to understanding the universe as conceived in physics. Except perhaps for John Wheeler, most physicists would not agree, of course, with the constructedness of their universe mainly because their theories reserve no place for the language in which they are formulated and their discourse-specific way of reading and writing. This blinds physicists (taken as proxy for other natural scientists and positivists within the social sciences) to the effects of their use of language on their own perceptions and constructions, to the illusion involved in claiming to be able to observe without being observers, and to the possibility that the data they generate are the results of experimental interventions in nature, and in that regard their own artifacts—more on this later.

Just as the artifacts of one discourse change what they are when entering another, so do members of one discourse community acquire different identities when crossing into another discourse community. People may change their discourse membership serially—serially because being a member in one discourse community entails speaking and acting as one, and it is difficult to simultaneously speak as different persons. When scientists enter a public discourse, e.g., a political demonstration, or function as a family member, they carry their body with them but speak differently and become different persons. When stopped for speeding, an academic discourse would be irrelevant. One comes to the conclusion that discourses are relatively closed to their consensual coordinations with artifacts that matter to their communities but remain open to material and human bodily migration.

By continually reworking their artifacts, reconstructing their reality, discourse communities develop traditions, repetitive practices, and norms that become part of how that community defines itself. Thus:

(Three)
Discourses institute their recurrent practices

The institutions of science appear in a variety of forms from regular publications, educational programs, procedures to obtain certifications for various degrees of membership, rituals to celebrate exemplars of research, and methods for establishing evidence. Institutions are not merely convenient ways of increasing predictability of interactions within a discourse community; they have strong normative implications in the sense that deviating from them exacts a price (Phillips, Lawrence, & Hardy, 2004). The literal meaning of *discipline* suggests that the members of a discourse community discipline each other to preserve prevailing institutions and the identity of their discourse community.

As Berger and Luckmann (1966) pointed out, institutions are recurrent and largely habitually performed practices whose origin tends to be forgotten and who end up being taken as natural ways of being, preempting alternatives in effect. Institutions facilitate organizations to grow that do not merely serve them but seek to survive and grow and thus strengthen the very institutions from which they started. Publishers of scientific journals, for example, thrive on the recurrent needs of academics to publish or perish. They expect scholars to work for free, charge the habitual readers (subscribers) of their journals, benefit from continuous growth, and in turn strengthen the promotion criteria—a self-reinforcing circularity. Universities tie into this by measuring academic achievements in terms of numbers of publications for granting degrees to students and tenure to faculty.

The institutionalization of recurrent practices also creates artifacts in support of constructing the objects that define a discourse. Medical discourse, for example, constructs treatable patients from people who feel ill or disabled. Those who cannot be treated medically are of no interest to it—for example, people with financial or legal troubles. Even people who have exhausted all known treatment options are dropped as patients but might continue as subjects of research by other disciplines. Over the course of its history, medical discourse has instituted numerous standard practices, many of which are enshrined in hospitals, which are buildings for housing different medical specializations that perform routine diagnoses and treatments with instruments and drugs known for their effects. Organizational theorists tend to study hospitals from the perspective of management, economics, and internal communication, largely without reference to the discourse that constitutes them. In my opinion, the organization of hospitals can hardly be understood without reference to the medical discourse that fills their buildings with recurrent practices. Not just medicine, most mature disciplines institutionalize material facilities within which their artifacts can be created efficiently—science is at home in universities, government maintains administrative and parliament buildings, and there are railroad stations, post offices, and banks, all of which are designed to execute recurrent discourse practices. These material facilities are instrumental for a discourse, but to the extent their structures are fixed, they may also confine how a discourse can develop. Generally, institutions conserve established discourse practices.

Possibly the most important effect of instituting recurrent practices is the preservation of a discourse's autonomy: the ability of a discourse community to organize itself, which implies distinguishing itself from what it is not and to fend off unwanted intrusions. Thus:

(Four)
Discourses draw their own boundaries.

Like all established academic discourses, biology preserves itself by allowing only trained biologists to articulate what biology is and what it is not, to undertake biological research, to teach its discourse to students, and to decide what counts as an advancement of the subject matter of biology and what does not. Biologists are scientists, of course, but besides their commitment to the canons of science, they have to and do carefully preserve their own disciplinary vocabulary, their own analytical practices, and the realities they consider themselves qualified to construct. Biological concepts such as organism (a continuously living system), function (of organs for the well-being of a whole organism), homeostasis (internal equilibrium in the face of disturbances), purposes, species, and evolution have no currency in, say, physics. Biologists resist practicing physics not only because it would create chaos in their discourse but could also destroy the object of biology.

The boundary of a discourse is enacted by speech acts involving the binary distinction between inside and outside, what or who belongs, and what or who does not. Niklas Luhmann (1989) describes such decisions as applying a binary code. Such speech acts occur at the edge of a discourse where the danger always lingers that its vocabulary could be infested by alien terms, explanations could enter the discourse that undermine the coherence of its constructions of reality, and unqualified persons could ruin its past accomplishments. Decisions on whether to publish or reject an article submitted to the journal of an academic discipline, who is to address a professional convention, which individuals get teaching or laboratory jobs, and which research is funded are evidence of efforts to maintain or redraw the boundary of a discourse.

Precisely because boundaries are drawn in language and at the edge of a discourse, where discourses could clash with one another, the language used to draw such boundaries may reach into that of other, possibly intruding discourses. Economic, political, or personal considerations often come to play a role in such efforts, but considerations extraneous to a discourse are almost always subsumed under the criterion of maintaining or strengthening the well-being of the discourse in question. Needless to say, the boundaries of some discourses are easier to defend than others. I mentioned the object of linguistics but might add that of mathematics. Both define boundaries not easily challenged by other discourses.

Although members of different discourse communities may well have to cooperate with each other to address problems that neither can handle alone—city planning, formulating national science policies, even the development of human computer interfaces—such cooperations require some openness to other ways of thinking and respect for each other's competencies. However, this does not relieve discourses from competing with each other for scarce resources. For once, all discourses need to attract individuals to become members. A discourse that cannot maintain its community numerically dies with its existing ones. For another, discourses require material resources from their outside, customers, funds, political support, and products of other discourses in exchange for what a discourse can provide. Hence:

(Five)
Discourses must be able to justify their practices to materially relevant outsiders

Justifications may appeal to the soundness of a discursively constructed reality (claims of the coherence [validity] of their artifacts). They may appeal to the virtues of a discourse (claims of the benefits its artifacts may provide to others), and they may appeal to the competencies of their members in providing services to outsiders (claims of unique abilities and the responsibilities that a discourse community is willing to assume for what its members can do). I cannot think of an example of a discourse that does not need to justify itself to outsiders. Justifications take place in language, which is why I am hesitant to use Humberto Maturana and Francisco Varela's (1980) biological concept of autopoiesis—unlike Niklas Luhmann (1989) who has adopted this concept in his social systems theory.

These five constitutive components have been developed and elaborated elsewhere (Krippendorff, 1995, 2009a). They serve as a framework for asking novel questions. In the following section, I want to inquire into the nature of materiality on which discourses construct their reality.

AFFORDANCES OF DISCURSIVE ARTIFACTS VERSUS TRUTH CLAIMS

Positivist scholars tend to accuse constructivists of being unable to be certain about anything and ready to justify everything they like. This criticism may be justified for radical postmodernists, who claim indeed that everything we know is merely imagined and that there is nothing out there to hold on to. To me, this extreme position is hardly sustainable. Even in everyday life, we run into all kinds of obstacles whether we want it or not. What the linguistic turn (Rorty, 1979) has demolished is the Cartesian binary of objectivity and subjectivity, in the claim of the existence of a knowable world (an ontology) outside of us, which we are supposed to represent as accurately as possible inside of us or in writing. This and related binaries fail to address the very dimensions within which constructivism operates and lead to the strange equation of constructivism with relativism. Linguistics has settled on realism by claiming that the object they are constructing actually exists in the mind of speakers, albeit controlling their speech only imperfectly, and is capable of objectively representing the world as it exists, with scientists trained to counter human biases of representation. These conceptions also are the source of the strange two-world conception of semiotics, separating the world of signs and the world of referents (Stewart, 1995). To me, abstracting humans out of the world they occupy, especially claiming that scientists could accomplish the feast of relieving themselves of their body and are able to perceive the world from a God's eye perspective (Putnam, 1981), is questionable to say the least.

However, I grant that my conception of humans living together in language, especially in self-organizing discourses whose members experience their world constructions in ways outsiders cannot, could be read as extreme as well—but this judgment falls apart when one recognizes that my conception of language is not representational, as that of traditional linguistics. As should be abundantly clear from the foregoing, to me, language is practiced in actual conversations that necessarily include participants who have past experiences and do all kinds of things, not merely conversing with one another. Their bodies are real. Their actions—

linguistic and nonlinguistic—are real, and their experiences can hardly be denied. Texts without a reader are unattended matter. The question to be discussed in this section is what these experiences are of, how the world outside a discourse manifests itself inside of it, and what materiality means.

I embrace Immanuel Kant's (1724–1804) insight that we, humans, have no direct access to the world outside of us, yet we live in it, to which I wish to add, in conversations with each other. Kant echoed the earlier but less known Italian political philosopher and jurist Giovanni Battista Vico's objections to the Cartesian binaries. Vico built his proposal for a "new science" on the premise that we humans cannot know what is, only what we have made, which includes not only tools, libraries, institutions, laws, and governments, but also our conceptions of nature. In the spirit of that time, Vico (1668–1744) suggested to leave the world without human actions to God. Indeed, without access to an unobserved world, the idea that linguistic expressions could represent an objective (i.e., observer independent or God's ontological reality) does not make sense, nor do the ideas of representational truth and of language as a medium of representation (Rorty, 1979). Translating Vico's *Verum esse ipsum factum*, one could say that truths manifest themselves in processes of making, or concerning language, in Wittgenstein's (1967) conception of language as doing something—jointly, to draw on John Shotter's (1993) frequent insistence. For this view, there are many recognizable authors to cite, older and more recent ones. I want to focus on one simple concept that roots discourse in materiality: affordance.

The word *affordance*, not found in most dictionaries of the English language, was coined by James J. Gibson (1977, 1979) as part of his theory of perception, known as ecological. The theory had its origin in experiments conducted during World War II, in which Gibson was asked to study what airplane pilots needed to see when trying to land an aircraft, especially under less optimal conditions. Gibson found that pilots did not literally see the physical features of a terrain before landing their plane. They had a good sense of the "landability" of their aircraft and had that sense rather directly, without engaging processes of abstract logical reasoning. He found little correlation between the physically measurable surface characteristics and pilots' perception, a fact that Maturana and Varela (1987) also observed regarding the perception of color. Generalizing his theory to all beings, Gibson defines:

> The <u>affordances</u> of the environment are what it <u>offers</u> the animal, what it <u>provides</u> or <u>furnishes</u>, either for good or ill. . . . (Affordance) refers to both the environment and the animal in a way that no existing term does. It implies the complementarity of the animal and the environment. . . . (Material) properties … (can be) measured with scales and standard units used in Physics. As an affordance of support for a species or animal, however, they have to be measured relative to the animal. (Gibson, 1979, p. 127)

One lesson of Gibson's work is that one does not perceive objects, but their usability: the sit-ability of what we name a chair, the contain-ability of something in what we call a container, the step-up-ability of what we refer to as stairs, the open-ability of what we take to be doors, the edibility of what we consider food, the interaction-ability of what we know as websites, blogs, and interfaces with computers (Sundar & Bellur, 2010), and even the solvability of mathematical equations. Affordances, Gibson points out, have much to do with the makeup of the human body, but not only that. For example, a 4-inch cube (a quantitative description of a geometric form) is graspable, whereas a 10-inch cube is not. Graspability requires an object to have two opposing surfaces, separated by a distance less than the span of the hand, We may construe the readability

of texts as a property of its composition, but this applies only after one's body has undergone an arduous process of literacy training aimed at making the reading and writing of a particular language an unproblematic coordination among members of one's speech community.

Another lesson: When our sensor motor coordination, the circularity of perception→action→changed perception→ and so on, is habitually enacted, we take the affordances of our environment for granted and do not ask how and why this is so. Gibson called his theory ecological because he realized that what ecologists call a niche and define as the environmental conditions that support a species' life is nothing but a system of affordances, not to be confused with phenomenological or subjective world constructions. Thus, affordances of artifacts equal the habitual, often unnoticed, taken-for-granted fit between being and the environmental support for that being—much as Martin Heidegger had conceptualized "being." (Dreyfus, 1991). If it works, there is no need for asking why, no need for knowing how the support is provided for what we do. For this reason, discourse analysts do not feel the need to analyze the paper on which a text is written, although without that material support, a text would not exist. Yet for historians and archeologists, the makeup of that paper may well be an important datum.

Gibson was aware of the difficulty of finding linguistic expressions by which he could escape explaining perception in terms of responses to physical properties of stimuli or by psychologizing it, but he did not conceptualize language. As a psychologist, Gibson also focused mainly on the fit between individual perception/behavior and environments and less on how social interaction, consensual coordination, language games, and institutions are afforded. Finally, he spent little time on what happens when environments fail to afford human conceptions and actions. But these limitations are not too difficult to bridge (Krippendorff, 2004).

From the foregoing, I claim that the artifacts that a discourse brings forth and identifies as its own is the whole and only materially afforded reality that counts within a discourse. Obviously, an environment affords numerous artifacts but by no means all. Artifacts that cannot be afforded may be talked of but cannot be built, used, and experienced. Thus, artifacts are far from arbitrary constructions. On the most basic level, not all surfaces lend themselves to writing and (re)reading. Not all character strings make sense to a discourse community. Not all writing leads to something else, and when they do not, we would not know whether they matter. The history of science consists of frequent revision of theories—not because they gradually improved the accuracy of accounting for the existing world (Kuhn, 1992), as most natural scientists like to think—but because the experiments they encouraged scientists to undertake produced unpredicted results.

All experiments, surveys, and observations are designed by someone and executed in accordance with the prevailing conventions of a discourse community and the theories or hypotheses under consideration. Data are not found, as many carelessly say they are. They are generated by mechanisms that are designed for that purpose, conceptualized as such, hence made, and tailored for analytical convenience and in support of theories. If the "findings" of scientific discourses do not lead to human actions, even if only to generate more "findings," then they could not be invalidated, as Karl Popper would say. The Large Hadron Collider near Geneva is an undeniable artifact that cost billions, took years to build, and is expected to produce particles composed of quarks that would not be found otherwise. Its results are artifacts of the mechanism that generated them. Successful experiments always intervene in nature, create

something artificial, and speak more to scientists' ability to convert their theories into data generating mechanisms that nature can afford than to what the universe is like without that intervention.

Creating usable artifacts is essential to any discourse. A medical diagnosis would remain nothing but a word unless practitioners know ways of treating the diagnosed disease or can at least reproduce its mechanism. Either intervention is legitimate and customary within the medical discourse. Even psychiatric diagnoses, although not necessarily based on biological mechanisms, pertain to a mechanism in language use. They may become real when patients accept them as valid, change their behavior accordingly, and perform, albeit unwittingly, what is known as a self-fulfilling prophesy. Virtual reality is virtual by being mediated through a known computational device but real only to the extent that it affords the sensor motor coordinations of a subject. A war becomes real not by pronouncing it, but when there are people willing to and actually do fight a declared enemy. Testing the reality of the artifacts of any discourse means enacting what they mean and do in the context of an otherwise unknowable environment.

This unknowable environment is a peculiar communicator. It is either silent or objects to how it is being treated, it affords the actions implied by our conceptions of particular artifacts or it does not, but it never tells us why it objects, always leaving open how we explain the lack of affordances. It allows numerous discourses to construct its artifacts, but not all. The absence of affordances for them is the only reality we may come to know.

One should be reminded that affordances always refer to discourse-informed but ultimately human activities, whereas truth claims are a property of propositions implying a God's eye view.

DISCOURSE DYNAMICS

Not all discourses conduct themselves as clearly as academic discourses do. Some are less well formed, shorter lived, more open to outside influences, divide into subspecies, or dissolve into others, but all of them evolve.

Transgressing the boundaries of discourses is common. Often transgressions serve the invading discourse at the expense of the invaded. Among the natural sciences, physics is the oldest and is much admired by other disciplines for the sophistication of its (mathematical) theories and the certainty with which it can state its claims, and therefore it is emulated by other discourses, less certain of themselves. Among the social sciences, economics plays a similar role. The economic discourse concerns itself with the distribution, exchange, and dynamics of quantities of value. Having a single currency to contend with, albeit in numerous forms and with various properties, serves the discourse of economics well. Not that economics is all that successful—why aren't economists rich?—but its theories are appealing for their elegance and simplicity. By encouraging the quantification of all kinds of resources and offering its calculus as universal explanations of human behavior, economics is a colonizing discourse. Democratic politics, for example, should have little to do with money, yet election outcomes are increasingly explained by the amount of campaign contributions a candidate or party is able to collect—not that these explanations are invalid but their validity depends on enacting their claimed importance. Religious discourses too have little to do with monetary considerations, yet in the current culture, churches seem to survive mainly by managing to amass wealth and extract financial contributions from their congregations. This is not "natural." It need not be so.

By characterizing a discourse as colonizing, I do not imply evil intents. Usually the colonized discourse has run out of steam and/or fails to guard its boundary against alien vocabularies and theoretical explanations. A while ago, I looked into the discourse of professional designers, engaged in the design of cultural objects (Krippendorff, 1995). I observed numerous other discourses trying to usurp the design discourse, for example, marketing by defining design as one of its branches that adds value to marketable products, art history by analyzing design as an applied art, or engineering by insisting on functionality as a universal criterion, preventing the understanding of all designs as cultural artifacts. Colonizing the design discourse is facilitated by designers not recognizing the consequences of their use of language, their inability to articulate their own uniqueness, and competing with each other in adopting the fashionable conceptualizations from other more reputable disciplines.

Territorial struggles can be expected whenever discourses are moving in materially similar terrains but use unlike forms of engagement. The discourse of communication research emerged after World War II. It separated from journalism because of the latter's inability to cope with the dynamics of new technologies, then radio and television. It clashed first with the sociology of knowledge, which claimed the same territory but lost because its categories could not address the phenomena of transmission that fascinated early communication researchers. Semiotics too claimed communication to be part of its theory of signs, but its intellectually shallow vocabulary did not produce anything exciting. Recently, cognitive science has claimed not just linguistics and much of psychology as its own empirical domain but also theories of human communication, albeit in a manner so restricted that it does not pose a serious threat. Many of these struggles took and still take place at universities, where they raise questions of allocating resources in the form of buildings, faculties, and attracting students—all of which concern the material and human base of the discourse of communication research and media studies, but not what it investigates and theorizes.

The discourse of cybernetics, for comparison, took a distinctly different turn. The word was coined (Wiener, 1948) in an intellectual climate that brought together an amazing group of productive scholars whose theories stimulated numerous technological innovations, ranging from feedback control mechanisms, automata, communication networks, self-organizing systems, computers, and information-processing technologies up to the still-growing cyberspace. However, its practitioners failed to establish institutional structures that could sustain the discourse materially. Their ideas fertilized existing discourses, for example, introducing autopoiesis into biology (Maturana & Varela, 1980), feedback theories of government into political science (Deutsch, 1963), communication theory into therapy (Ruesch & Bateson, 1952), various reflexivities into the social sciences (Krippendorff, 2008), and, last but not least, mathematical communication theory (Shannon & Weaver, 1949) into communication studies (Schramm, 1963). It also created entirely new discourses: operations research, management science, computer science, artificial intelligence, robotics, and radical constructivism in which cybernetics continues to grow under various guises. But without instituting its recurrent practices, cybernetics dispersed. It became a true interdiscipline.

Public discourse is another discourse whose dynamics is of considerable interest to communication scholars. Its boundary is defined on the one hand by the distinction between public and private deliberations, and on the other hand, by the immanent conflict between the freedom to discuss and act on common concerns, and compliance with the demands made by authorities, especially by corporations and the state. Public discourse takes place in ordinary

settings—in coffee houses, bars, public places, and on streets to which access is unregulated. Ideally, the public discourse community is also inclusive of all stakeholders in an issue, regardless of status and class membership, granting everyone a voice. Its boundary is somewhat fluid and open to negotiations from within the discourse. For instance, in contemporary France as well as until 40 years ago in the United States, the Monica Lewinsky affair of President Clinton would have been a private matter. However, in the United States, that boundary has shifted, and the affair became subject of public scrutiny, nearly culminating in the impeachment of the U.S. President. Jürgen Habermas (1989), probably the most outstanding theorist of what he calls the "public sphere," saw the ideal of universal access, uncontested participation, and serving the public good to be eroding under the influence of commercialism that controls the news flow and corporate interests in the outcome of political debates. Nancy Fraser (1990) questions Habermas' ideal by noting that there never was a public discourse free of hegemonic dominance, privileged elites, and silenced voices. She observes that marginalized groups often form their own public spheres and sometimes succeed in amplifying their voices, for example, speaking as women, African Americans, or gays. Treating the public as discourse does not need to invoke an abstract ideal. It is enough to see how the public defines and addresses conflicts between unwanted institutionalizations and the freedom of having the voices of its members counted. For example, the concept of free speech, enshrined in the U.S. Constitution as an individual right, has been extended by a 2010 U.S. Supreme Court decision to allow corporations to finance political campaign contributions—lacking awareness that corporations are but mere metaphorical persons who cannot speak. Only individual humans speak a language, possibly in the name of corporations or discourse communities. Public discourse, like all discourses, continuously organizes and reorganizes itself, not necessarily moving toward an ideal but toward an equilibrium that balances the actual voices of its stakeholders. Undesirability must be articulated and distributed to become a public concern.

The discourse dynamics exemplified previously has many dimensions worthy of inquiry. Remarkable is that these interacting discourses are all afforded by the environment in which they operate or else they would not occur. This attests to the extraordinary plasticity of the environment in which we act, far from being the universe that some discourses seek to establish.

TECHNOLOGICAL ARTIFACTS

Texts and mechanical devices have much in common. They must be readable, discussable, usable in particular situations, and, as such, acceptable by their respective discourse communities. Moreover, their (re)articulations, transformations, and use must be affordable by the materiality of their environment. Novel artifacts arise by decomposing, recombining, and transforming existing ones in unprecedented ways. Scientific activities, such as reviewing a literature, designing experiments, generating and analyzing data, reporting findings, and postulating theories, imply that future inquiries rely on recombinations of written characters, propositions, parts of texts, journal articles, and books in paper or electronic forms that are acceptable within a scientific community. Thus, textual matter must be

- Reproducible or communicable within a discourse community,
- Readable (i.e., make sense to its members),
- Considered consistent with the practices (coordinations) within the community,

and, for a discourse to stay alive, it must also be

- Open to further decompositions and recombinations (quotable, citable, reinterpretable, revisable, accept novelty) in the context of other discursive matter.

Technological artifacts, I suggest, have similar combinatorial properties. For example, the invention of the automobile replaced the horses of the then familiar horse-drawn carriages by a mechanical engine, leaving the concept of a driver and the four wheels of the carriage in place. The relationships between these linguistically unambiguous components had to be materially adjusted in the automobile. The evolution of the automobile is a history of rearticulations. It changed not merely to accommodate drivers, passengers, and the emerging culture of its use, but also its affordances in the form of streets, cities, and industries (for mass production, services, including oil explorations)—all coordinated by means of language, texts, and drawings. That history also included many failures. Developments that were not afforded died. Similarly, the recent emergence of the iPhone began its life with all the devices its designers intended to combine: hand-held phones, cameras, MP3 players, personal computers, and GPS devices, all of which were in separate use before their appearance. The iPhone existed first in science fiction, then in conversations among Apple designers, followed by sketches and searches to find technologies by which it could be realized. Surely, what we now talk of embraces a variety of previously existing and new uses, and this is but a step in its continuous development and in the changing social and material affordances.

There are two crucial differences between textual matter and technological artifacts, however. One lies in their unequal materiality. Whereas the medium of textual matter affords an enormous freedom of use—one can write anything that paper or an electronic medium can endure; however, even the texts of poets need to make sense within a community, even if small, that celebrates their authors as poets. Technological artifacts, too, must make sense to their stakeholders before they would consider realizing and/or using them. But they also need to work. The interactions between their parts must afford their physics.

"Technology" has several senses not found in textual matter. I mention three:

- The logic (knowledge) of how the parts of a material artifact work together as a mechanical or chemical system that jointly perform desired functions
- The logic (knowledge) of producing material artifacts to specifications, which is what craftsmen had to have and industrial manufacturers to this day employ in realizing them
- The logic (knowledge) of how multiple species of artifacts, each produced for different purposes, are brought into interaction with one another by different human agents, form networks of often unintended causal dependencies, cooperative and competitive relationships, just as in an ecology (Krippendorff, 2006a, pp. 193–205).

The first two senses are elaborated and taught in academic engineering schools and applied by practitioners. Since the Industrial Revolution, engineering discourse has advanced far beyond the discourse of the crafts, which was still understandable by ordinary people.

The more important difference between textual and technological artifacts is best introduced by example. A contemporary computer is an artifact of engineering to begin with. But it is also designed to be usable by many who are not engineers and do not have a clue of how it does what they believe it does. Ordinary people know of computers from participating in the conversation in their community but learn to use them by interfacing with them. In fact, the interface with a computer—or any technological artifact for that matter—is nearly all a user knows when

utilizing a technological artifact. A computer interface employs icons and metaphors from everyday life to be understandable by many. Opening a file lets us maintain the belief that it contains something. Dragging a document into a trashcan gives us the impression that it is discarded. These are two metaphors from the paper handling world. Pointing to something we want is more basic and known to us since we were children, and dragging objects from one place to another is part of everyday experiences for which we have numerous expressions in natural language. What takes place behind the computer screen escapes us nearly completely or is ill conceived. Our conceptions do not really matter as long as they do not get us into trouble. For example, as criminologists know, when a file is deleted from a computer, it is rarely gone, only tagged differently. What actually happens inside a computer, the materiality that mysteriously supports our handling the icons in its interface and what we think we talk about when employing convincing metaphors to explain to each other what we do, evidently is quite irrelevant to how we use this artifact, but surely, this is less so for the designers of computer chips, computer architectures, software, and interfaces, who have their own highly specialized discourses to design computers that work for us.

The discourse that governs computer use is essentially public—public because computer screens are designed to be understandable to many people who can talk freely of their use. True, there is computer jargon, which is not universally understandable. Also, computer competence is growing unevenly within the public. But without drawing boundaries and instituting recurrent practices, this common talk does not make it a discourse. It is a mere specialty within public discourse. So, the materiality of a computer resides in at least two discourses, the public discourse of its interface and the discourses of those who participated in designing it.

Except for rather simple artifacts—the paper for writing, the makeup of scissors, and the furniture at home—the materiality of technological artifacts that fascinate us today cross discursive boundaries. In that respect, the artifacts that natural science discourses construct are easily tractable within their own discourses. They are the constituents of monological constructions of reality. Technological artifacts, by contrasts, reside in interdiscursive relations and constitute dialogical reality constructions, which are essentially cultural by involving several discourses.

Any discourse can grow by penetrating the affordances of its artifacts, conceptualizing and acting on their makeup, and opening other affordances behind them. The history of physics bears out this pattern of growth: moving from classical Newtonian mechanics, theorizing the movement of objects, to atom physics, theorizing the makeup of objects in terms of the interaction among their "smallest" parts (then molecules and atoms), to quantum mechanics. When it comes to the use of technological artifacts in public discourse, however, penetrating their materiality reveals affordances in the form of other discourses whose artifacts are imported materially in the public discourse. Usually, the three senses of technology differentiated earlier remain hidden in the background; at most their contours come to be understood by their users.

Television is another example of a technological artifact. What we ordinarily see is our TV set and the images it reproduces. We have no clue what is going on inside it. We are told of satellites when our satellite dish malfunctions. We know of studios when they are mentioned, but we have little appreciation of all the discourses that cooperate in producing news or getting a show on the air. The use of technological artifacts requires an enormous amount of trust in discourses of which we have only a faint understanding but must acknowledge as being a central prerequisite of the technology we are using in public or private discourses. Thus, the affordances

of technological artifacts of some complexity do possess materiality, especially when in use, but penetrating their materiality always gets us to other discourses. Technological artifacts are essentially social artifacts, the result of interdiscursive collaborations, reflective of a society in which many discourses are networked by mutual trust in the affordances they provide each other. Ours is a technologically informed society that still needs a discourse to be understood.

A LAST COMMENT

I contend that communication research has largely ignored analyzing the material affordances of language use. Our scholarly discourse treats language mostly as *about* something, not as *part of what it constitutes* or brings forth. This disconnect directs our attention to abstractions without their base. So, we speak with seeming confidence of information, the content of TV messages, new media, digital divides, organizational communication, public spheres, neoliberalism, and globalization as if we knew the material ground of this talk, the discourse dynamics behind these abstractions, and the sophisticated technologies that afford such theorizing. For a last example, the Internet is a technology that provides the materiality for numerous discourses to compete and collaborate with each other in this medium. It is commonly misconstrued as supplying information while actually providing affordances for the construction of new kinds of artifacts, artifacts we have not experienced before, and directing social developments in unprecedented ways. Perhaps Harold Innis' (1950, 1951) work, limited to communicative artifacts, may need to be reexamined and extended to shed light on how other discourses are materially supported, grow accordingly, and unequally, and become embedded in each other, including our own.

REFERENCES

Berger, P. L., & Luckmann, T. (1966). *The social construction of reality. A treatise in the sociology of knowledge.* Garden City, NY: Anchor Books.

Chomsky, N. (1957). *Syntactic structures*. The Hague: Mouton.

Craig, R. T. (1989). Communication as a practical discipline. In B. Dervin, L. Grossberg, B. J. O'Keefe, & E. Wartella (Eds.). *Rethinking communication: Volume 1. Paradigm issues* (pp. 97–122). Newbury Park, CA: Sage.

Deutsch, K. W. (1963). *The nerves of government: Models of political communication and control*. New York: Free Press.

Dreyfus, H. L. (1991). *Being in the world; A commentary on Heidegger's Being and Time*. Cambridge, MA: MIT Press.

Edwards, R. (1979). *Contested terrain.* New York: Basic Books.

Fairclough, N. (1999). Global capitalism and critical awareness of language. *Language Awareness*, *8*(2), 71–83.

Foucault, M. (1969/2002). *The archaeology of knowledge* (A. M. Sheridan Smith, Trans.). London and New York: Routledge.

Fraser, N. (1990). Rethinking the public sphere: A contribution to the critique of actually existing democracy. *Social Text*, *25/26*, 56–80.

Garfinkel, H. (1967). *Studies in Ethnomethodology*. Englewood Cliffs, NJ: Prentice-Hall.

Gibson, J. J. (1977). The theory of affordances. In R. Shaw & J. Bransford (Eds.), *Perceiving, acting, and knowing: Toward an ecological psychology* (pp. 67–82). Hillsdale, NJ: Erlbaum.

Gibson, J. J. (1979). *The ecological approach to visual perception*. Boston, MA: Houghton Mifflin.

Goffman, E. (1959). *The presentation of self in everyday life*. New York: Doubleday.

Goodwin, C. (1981). *Conversational organization: Interaction between speakers and hearers*. New York: Academic Press.

Habermas, J. (1989). *The structural transformation of the public sphere: An inquiry into a category of bourgeois society* (T. Burger, Trans.). Cambridge, MA: MIT Press.

Innis, H. (1950). *Empire and communications*. Oxford: Clarendon Press.

Innis, H. (1951). *The bias of communication*. Toronto: University of Toronto Press.

Krippendorff, K. (1995). Redesigning design; An invitation to a responsible future. In P. Tahkokallio & S. Vihma (Eds.) *Design - Pleasure or responsibility?* (pp. 138-162). Helsinki: University of Art and Design. http://repository.upenn.edu/asc_papers/46/

Krippendorff, K. (2004). *Content analysis; An introduction to its methodology* (2nd ed.). Thousand Oaks, CA: Sage.

Krippendorff, K. (2006a). *The semantic turn: A new foundation for design*. Boca Ratan, FL: Taylor & Francis, CRC Press.

Krippendorff, K. (2006b). The dialogical reality of meaning. *The American Journal of Semiotics*, *19* (1–4), 19–36. Available at http://repository.upenn.edu/asc_papers/51

Krippendorff, K. (2008). Cybernetics's reflexive turn. *Cybernetics and Human Knowing*, *15*(3–4), 173–184. Available at http://repository.upenn.edu/asc_papers/136

Krippendorff, K. (2009a). *On communicating; Otherness, meaning, and information* (F. Bermejo, Ed.). New York: Routledge.

Krippendorff, K. (2009b). Conversation: Possibilities of its repair and descent into discourse and computation. *Constructivist Foundations*, *4*(3), 135–147. Available at http://repository.upenn.edu/asc_papers/134

Kuhn, T. S. (1992). *The structure of scientific revolutions* (3rd ed.). Chicago, IL: University of Chicago Press.

Luhmann, N. (1989). *Ecological communication*. Chicago, IL: University of Chicago Press.

Maturana, H. R., & Varela, F. J. (1980). *Autopoiesis and cognition: The realization of the living*. Dordecht, Holland: D. Reidel Publishing Co.

Maturana, H. R., & Varela, F. J. (1987). *The tree of knowledge: The biological roots of human understanding*. Boston: Shambhala Publications.

Newcomb, T. M. (1953). An approach to the study of communication acts. *Psychological Review, 60*(6), 393-404.

Phillips, N., Lawrence, T. B., & Hardy, C. (2004). Discourse and institutions. *Academy of Management Review*, *29*(4), 635–652.

Potter, J. (1996). *Representing reality; Discourse, rhetoric, and social construction*. London: Sage.

Potter, J., & Wetherell, M. (1987). *Discourse and social psychology: Beyond attitudes and behavior*. London: Sage.

Putnam, H. (1981). *Reason, truth and history*. New York: Cambridge University Press.

Rorty, R. M. (1979). *Philosophy and the mirror of nature*. Princeton, NJ: Princeton University Press.

Ruesch, J., & Bateson, G. (1952). *Communication: The social matrix of psychiatry*. New York: W.W. Norton & Company.

Sacks, H. (1992). *Lectures on conversation* (Vols. I and II) (G. Jefferson, Ed.). Oxford: Blackwell.

Saussure, F. de (1959). *Course in general linguistics* (C. Bally & A. Sechehaye, Eds.; W. Baskin, Trans.) New York: Philosophical Library.

Schiffrin, D., Tannen, D., & Hamilton, H. E. (Eds.). (2001). *Handbook of discourse analysis*. Oxford: Blackwell.

Schramm, W. (1963). *The science of human communication*. New York: Basic Books.

Shannon, C. E. & Weaver, W. (1949). *The mathematical theory of communication*. Urbana, IL: University of Illinois Press.

Shotter, J. (1993). *Conversational realities*. Thousand Oaks, CA: Sage.

Stewart, J. (1995). *Language as articulate contact: Towards a post-semiotic philosophy of communication.* Albany, NY: SUNY Press.

Stubbs, M. (1983). *Discourse analysis: The sociolinguistic analysis of natural language.* Oxford: Blackwell.

Sundar, S. S., & Bellur, S. (2010, June 22–26). *Measuring media use as affordances: A heuristic approach to interactivity*. Paper presented at the 60th annual conference of the International Communication Association, Singapore.

Taylor, J. R., Cooren, F., Giroux, N., & Robichaud, D. (1996). The communicational basis of organization: Between the conversation and the text. *Communication Theory*, *6*(1), 1–39.

van Dijk, T. A. (1987). *Communicating racism: Ethnic prejudice in thought and talk.* Newbury Park, CA: Sage.

van Dijk, T. A. (1988). *News as discourse*. Hillsdale, NJ: Erlbaum.

van Dijk, T. A. (Ed). (1997). *Discourse studies* (2 vols.). London: Sage.

Vološinov, V. N. (1986). *Marxism and the philosophy of language.* Cambridge, MA: Harvard University Press.

Wetherell, M., & Potter, J. (1992). *Mapping the language of racism: Discourse and the legitimation of exploitation*. New York: Harvester.

Wiener, N. (1948*). Cybernetics or control and communication in the animal and the machine.* Cambridge, MA: MIT Press.

Wittgenstein, L. (1967). *Philosophical investigations*. Oxford: Blackwell.