MATRIZes

A cultural form for the technological society

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Abstract

This paper reconstructs a theoretical debate that emerged from the work of Niklas Luhmann, Dirk Baecker and Vilém Flusser on the cultural form that should arise within computer society. Despite the differences of epistemological perspective and theoretical foundation that the three authors presented, their works share an un- derstanding that the introduction of computers and the internet changes not only culture, but also the material structure of society. The first part of the paper discusses the historical inevitability regarding the emergence of a cultural form for technology, while the second part of the text suggests a few possible forms that may stabilize the surplus of meaning created by computers and the internet.

Keywords: culture, Niklas Luhmann, Vilém Flusser

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> I came to the conclusion that in any project we design or develop, the size and degree of complexity of the information and control system inscribed in it are the crucial factors, so that the all-embracing and absolute perfection of the concept can in practice coincide, indeed ultimately must coincide, with its chronic dysfunction and constitutional instability.
>
> (Sebald, 2001: 281)

THE SURPLUS OF MEANING

Niklas Luhmann's theory of social systems describes a scenario for the technological society that contradicts the diagnosis of an information overload. Instead of an information overload, Luhmann claims computer and information technologies are creating a context of surplus of meaning. Even though the German sociologist ignored computer-mediated communication in most of his works, there are some passages where CMC is enigmatically discussed. In Auswirkungen auf die Evolution des Gesellschaftssystems, Luhmann (1997: 405-412) offers an analysis that reevaluates the role of computers in contemporary society, suggesting that computers are a medium of information distribution of similar importance to writing, invented two thousand years ago, and the printing press, created five hundred years ago.

Based on René Thom's (1983) catastrophe theory, Luhmann highlights that society survived the first catastrophe — writing — by creating a high culture (Hochkulturen) that organized society in view of social stratification. The second catastrophe — the printing press — argues Luhmann, led society to the modern functional differentiation as we know it. Society only survived such drastic changes because organization shifted from first-order to second-order observation. The period after the introduction of writing is regarded as a period of the stability of forms. The third catastrophe was brought by computers, which as a consequence jeopardized the stability of forms created by the printing press.

Each catastrophe results from a surplus of meaning caused by the superabundance of sensory stimuli introduced by the new distribution medium. When individuals in society conveyed the secrets of religion and the taboos of morality solely by oral communications, the existing meaning processing system was kept safe within the limits of society, beyond which there was only the unknown and mystery. Writing breaks this stable scenario, making it possible to think taboos based on moral principles. Furnished by the exercise of human reason, writing technology rendered the sender of the message visible and legitimated the imposition of obligations and liabilities. Evidence of society's quick adaptation to the effects of writing can be found in the attempt to combine morality with religion. In this way, the sender could be subsumed within one divine essence, that is, within a single and invariable sender that is independent of context.

As a consequence, the writing society created a surplus of signs that exceeded the capacity of the system regulating taboos and secrets. Each text offered a multitude of decisions made possible only by the expanding horizon of possibilities revealed by writing. The discipline of philosophy emerged to give order to the chaotic realm of possibilities, especially in the work of Aristotle, who provided teleology to the system, that is, a semantic of purpose. A number of differentiation processes appeared to organize a cosmology of the whole with reference to necessary purposes. The selection criteria governing each differentiation indicated the appearance of culture, which is not the organization of all purposes, but the suitability to regulate the transitions between individual communications and social communications.

This new cultural context of selection allowed society to reproduce itself within a teleological perspective, whose chronological perspective advised against the pointless violence of oral society through the medium of theater. The new cultural context also introduced the semantics of love, commerce, politics, art, education and religion, to which the functional systems could connect. Written culture arranged personal relationships in a systematic fashion and classified the differences within domains expressed by the means of language and semantics. Family and region created, still according to Luhmann (1997: 19), the warranties for stability in the writing society. And based on these guarantees, a whole variety of social forms emerged.

The next catastrophe was the printing press. Dramatically increasing the availability of writing, the printing press allowed texts to be compared against each other and criticism to emerge as a direct and spontaneous effect of technical reproduction. Printing presses allowed the dissemination of criticism on a scale never seen before, and in doing so it turned critics into a heuristic standard whose unpredictability would eventually annihilate teleology. The regulation provided by teleology was affected by printing presses mainly because the critical organization of purposes revealed the logical impossibilities of such coexisting purposes. The inconsistencies and contradictions between the objectives pointed to the ambiguity and instability of the system. Once again, the surplus of meaning could not be contained and social systems lost the control provided by existing explanations and principled narratives.

The guarantees for stability in the society of the printing press could no longer rely on families and regions. No dynasty or territory could handle the uncertainties brought by the new medium. According to Luhmann (1997: 135), it was the libraries and the functional systems that provided the framework in which politics was acknowledged as politics, business as business and science as science. Structures of autopoietic reproduction simultaneously reshaped the semantic arrangement designed for them. The idea that we need to justify our intentions could

then be proposed and thus self-referentiality, now the only reference of social systems, was adjusted to provide the necessary purposes and objectives.

Dirk Baecker (2004: 125-149) commented on Niklas Luhmann's analysis and argued that the introduction of computers put an end to the functional differentiation of modern society created by the printing press. The closure is noticeable in the search for a new language in sociology (the theory of social systems) and a general shift in the paradigm of sciences, which begin to address heterogeneous networks rather than functionally specific systems. The three catastrophes — writing, the printing press and computers — have to be understood as catastrophes in the mathematical sense, i.e. as turbulent leaps that allow society to survive an event that otherwise would have annihilated it. The social system reacts to the perturbation, reviewing its procedures and advancing to a different level of organization and reproduction.

Luhmann's (1997) ideas about the computer world unfold into two theses. The first one states that computers added reflexivity to the autopoiesis of communication and thus established for the first time a competition with consciousness. Computers and the Internet would not only carry out the distribution, transmission and understanding of information. Because of their processing power, computers changed the messages, the information and also the understanding that are currently subjected to digital routines of processing and filtering. Commenting on the analysis of Luhmann, Baecker (2006) suggests that the digital processing of information fundamentally modifies the nature of data and the very meaning of the messages communicated.

The second thesis Luhmann presented about computerization states that society will need a new cultural form to survive the introduction of new distribution media of communication. This cultural form should handle the surplus of meaning generated by the new possibilities of communication. According to Luhmann (1997), the cultural form established by society to deal with the surplus of meaning generated by writing was the Aristotelian telos, which is a form that provided the conditions for the accurate selection of communications. Accordingly, the cultural form established to deal with the surplus of meaning generated by the printing press was Descartes' principle of a self-referential consciousness, a competence that underlay the universal forms of stability in modern societies.

For Luhmann (2005) the cultural form able to handle the surplus of meaning created by computers and the internet is the notion of "form." The concept was originally introduced by the British mathematician George Spencer-Brown and it provides a constructivist approach to the relationship between marked and unmarked, and can thus describe a communicative connectivity without making reference to any formative context. According to Baecker (2005),

Luhmann's diagnosis was proved effective when computers started changing the communication process to such an extent that users could not understand what was going on, who was saying what, what sources were reliable, or who was the intended recipient of said content. The information processing changed both the content and the meaning communicated, shifting the frames of reference we used to make distinctions between styles and meanings.

Dirk Baecker (2006) summarized Luhmann's observations highlighting that the computer differs from other media because it is a sequential machine designed for calculation that was never anticipated by other media. The organizational pattern is not stable and its production and reproduction depend upon interaction with interfaces that only add more unpredictability, instead of reducing it to a casual coupling. According to Baecker, that is the reason why we can voice ideas such as virtual reality and artificial intelligence. For Luhmann, computers provided an alternative completely original to the structural coupling between communication and consciousness. Previously, communication and consciousness were solely linked to one another by structural coupling, a scenario that computers changed by simultaneously connecting and interacting with communication and consciousness. As a distribution medium, computers break up the differentiation between information and message that governed the understanding of communication during the age of written and printed media.

> The connection between computers and psychic or social systems seems to lead to the manifestation of new forms. We no longer rely on old and stable forms, which were evaluated according to the codes of functional systems as true or not, useful or not, because each determination produces an undefined space and an outside, which can only be defined through additional operations (with identical results). These trans-classic machines do not refer to sophisticated technologies, even though they are part of certain contexts, but to the question of which forms create a better description and differentiation with results still unpredictable to the communication system of society (Luhmann, 1997: 305)

THE DOMAIN OF CULTURE

The summary of Luhmann's ideas regarding the technological society presented in the previous section identifies the invention of the computer as an event on the edges of communication theory. This is consistent with the diagnosis provided by Friedrich Kittler (1993), for whom the connection between information and message is completely lost in digital media. Within the context of Luhmann's theory of society, it is as if the computer-mediated communications are taking place regardless of the third selection process described in his theoretical scheme, which requires first the information, second the message (Mitteilung), and last the paramount but improbable operation of communication: understanding (Verstehen).

The absence of the third operation of selection, understanding, could render communication a hidden and automatized process. Besides, the movement from information to message, formerly two essential selections to the communication process, could disappear. The two selections offered the possibility of examining information and message within the context of communication. Because of that, it was possible to accept a crazy love letter because we knew the sender. It was also possible to reject the idea of God because of the exceedingly mundane personality of the priest or preacher. Due to the difference between information and message, it was possible to accept or refuse the communication on grounds other than those associated with the message.

Luhmann's threefold selections of communication process highlight the possibility of managing messages that was essential to the formation of modern society. It allowed and stimulated the emergence of institutions and systems to regulate this autonomy, and by creating these institutions and systems, it restructured again the same scenario of complexity. The three selections prevented communication from being reduced to the communicated content or the intentions of the sender, given that it provided a free contextual area that could change the view towards intentions and communicated contents. The context, which coordinated contents according to circumstances, allowed the emergence of interpretation and hermeneutics as fundamental guidelines that controlled communication.

Distribution media like writing or the printing press offered a clear overview of the connection between message and information, but the stability of this arrangement is fundamentally altered in the technological society. When computers started controlling the connection between message and information by hidden processes of digital calculation, the intentions of the sender became as concealed as the informational contexts. As a consequence, communications are processed independently from the threefold selections based upon information and message, a scenario that should render communications operationally incomprehensible and theoretically impossible.

Based on these projections, Luhmann understands the computer as a distribution and transmission medium that has an effect on the concept of communication. The surplus of meaning brought by the computer could only be reduced through the concept of form borrowed from Spencer-Brown (1971). But even if computers could operate based on the concept of form, thus processing not only what we know, but also what we do not know, it would still be necessary to observe social and psychic systems in order to understand the mechanisms employed for reproduction of thoughts at the individual level. Nonetheless, Luhmann suggests

that the computer created a transmission medium that replaces communication and consciousness for temporalized forms.

The idea that what changes is not the world, but the very process of changing the world, refers to the core of digital technology. According to Dirk Baecker (2007), computers and the Internet reorganized the communication process and changed not only the contents and forms, but also the meaning of communication. Platforms of interaction emerging under the rubric Web 2.0 not only indicate a gradual evolution of the technology landscape, but a moment of mesmerizing surprise when the public opinion acknowledges a change both in the experience and in the organization of reality. It was the moment when the public perceived the breaking of a narrative logic, or as Luhmann described it, the breaking of a cultural form that expresses the surplus of meaning brought by digital media.

But the new cultural form has not arrived yet. If modern society was a structure and a culture that handled the surplus of meaning resulting from the abundant possibilities of evaluation and criticism brought by printing press, then the next society will be a structure and a culture that handles the surplus of meaning generated by computer networks and their limitless possibilities of control. This is the diagnosis that connects authors and works as diverse as Marshall McLuhan (1962), Niklas Luhmann (2000) and Gilles Deleuze (1980). Luhmann believed that cultural form was the concept that could express this surplus of meaning, as it comprises a mechanism to describe the continuous operations of inclusion and exclusion that is of vital importance to digital technology.

Despite Luhmann's (1997) insistence on the concept of form, authors such as Dirk Baecker (2007) and Harrison White (2008) suggested an alternative concept that Luhmann could not have drawn from his own theory because the social systems theorist was too close to see. According to White (2008: 289), the idea that will reorganize the rhetoric of culture is the concept of systems. The idea that both technological and cultural objects are pervaded by system characteristics automatically elects the concept to the natural form of networks, i.e. as the expected form of the next society.

The interesting thing about the concept of form is that it allows for a very flexible approach to problems as well as a physical and material depiction of social layers. This becomes clear when we consider that the introduction of mass media has changed not only the culture and identity of societies as a whole, but also their material organization. The restructuring of the distribution patterns has a major impact on the material organization of society, and similar structural changes could have been observed in the transformations of tribal clans, in the strata

of ancient society, in the functional systems of modern society, and in the networks of the next society. The reorganization of the social structure follows a reconfiguration of the distributive model of information, a transformation in the core of communications that affects the face-to-face, the transmission, the diffusion, and the network contagion.

THE FORMS OF COMMUNICATION

The same relationship between distribution patterns and social organization was developed by Czech-Brazilian philosopher Vilém Flusser (Thöne, 2006). Flusser's (1998) communicology divided communication between two main patterns: one of production and one of accumulation. Production refers to the process of synthesis based on the available information and is methodologically achieved by dialogue. Accumulation refers to the storage of information in human memories or technical devices and is methodologically achieved by speech. Speech and dialogue are entirely independent processes, given that information can only be stored in memories or devices once it has been created. Conversely, dialogues can only take place once information has already been synthesized[2].

> The function of information is different in each type of dynamic. In discourse, information is contained in the memory of the sender and transmitted to the memory of the receiver. Therefore, information precedes the discourse, and discourse serves the purpose of transmitting information from one participant to another participant of a culture. An example of this is a lecture. In dialogue, there is partial information in the memories of the participants that is being synthesized into global information by the process. Therefore, new information results from dialogue, and it serves the purpose of elaborating information for a culture. An example of this is parliamentary debate that elaborates a law. The dynamic of communication is the elaboration of information through dialogue and its transmission through discourse (Flusser, 2002: 18)

[2] Flusser's master opus is a Borgian tale of mismatch between original and translation. The first edition of *Kommunikologie* included as introduction to the book the chapter "What is Communication" (*Was ist Kommunikation*) together with two chapters describing the structures of communication: "Some Structures of Communication" (*Einige Kommunikationsstrukturen*) and "How these Structures Work" (*Wie diese Strukturen funktionieren*). An alternative version of Flusser's *Communicology* was published in Portuguese under the name *Pós-História*, which is an abridgment of the fifty-minute speeches Flusser delivered in Marseille, Jerusalem, and São Paulo. The extract "Our Communication" (*Nossa Comunicação*) offers an outline of the first and second chapters of Flusser's *Communicology*, whose original manuscript known by the tentative name *Mutations of the Human Relations* was prepared by Flusser between 1977 and 1978, at first in English and German, and later in French. The work was only published posthumously in 1996 by Vera Eckstein and Stefan Bollmann. In the first chapter, Flusser describes the six structures of communication and the four speech modalities: Theatrical Speech, Pyramidal Speech, Amphitheatrical Speech and Treelike Speech. It also includes the two modalities of dialogue: Circling Dialogue and Networking Dialogue. The second chapter examines how the six structures work together from a communicational and informational point of view. The introduction to *Communicology* — "What is Communication" (*Was ist Kommunikation*), written between 1973 and 1974 — was published in English in 2002 and in Portuguese in 2007. The American version also includes an additional text entitled "On the Theory of Communication" that Flusser wrote in English and that was never translated into other languages.

Flusser (1998) subdivides the dialogues into two subcategories according to the diffusion pattern. The dialogue could be circular (round tables or assemblies) or networked (telephony or public opinion). The subdivision of the speeches is performed in four subcategories: theatrical (classes and concerts), pyramidal (armies and churches), treelike (science and arts) or amphitheatrical (radio and printing press). Western history is depicted as a communication game played among these modalities with the sole purpose of producing and accumulating new information.

The theatrical discourse is the oldest and Flusser dates it as prior to history. It is the patriarch's speech orally transmitting myths to new generations or the grandmother's speaking to grandchildren about ancient legends. In this modality there is a fundamental face-to-face situation between sender and receiver. The spatial arrangement is provided by semi-circles, typically formed around the speaker. Receivers can challenge the sender, who must answer the questions at the risk of being discredited. The theater, for Flusser, is a speech oriented towards dialogues. Disputes, twists, and discussions are anticipated in the theater category and revolutions always seem possible around the bonfire.

Still according to Flusser's Communicology, the passage from the Paleolithic to the Neolithic was characterized by the transition from hunting and gathering to agriculture and settlement. The new mode of production was also reflected in the communication diagram. Collective enterprises, such as urban constructions and business activities, refuse the dialogue modality in view of a growing need for obedience. The theatrical discourse becomes inefficient, since society demanded more information and less debate, more messages and less discussion, a necessity that could only be accomplished by avoiding access to the sender.

The next modality, pyramidal speech, shaped the communication basis of Western society and consists on the introduction of hierarchically organized relays between sender and receiver. As in sacerdotal orders — organizations that anticipated the pyramidal modality — messages are sent from an unreachable author (God) and travel through authorities entrusted by the system, whose relay function is both to ensure the fidelity of the message, keeping it away from noise, and to prevent recipients' access to the sender. The personal liability that embodies the theatrical modality gives place to a loyalty system governed by tradition and confidence in the issuing authority. This communication diagram from the late Neolithic remained operational in a number of institutions such as the church, the state, the army, the corporations and political parties. The pyramidal form emerged mostly to ensure the storage of information. The drawback of this system was the difficulty in establishing dialogues, and thus generating new information.

The social exchange stagnated to such an extent that during the Renaissance a whole set of reforms was implemented to include dialogues and preserve the efficiency of the pyramid. The relays were transformed into dialogical circles, yet still retained hierarchical organization. The result of the reforms was the creation of the third subcategory that shaped modernity: treelike speech. This form differed from previous speech forms by distributing the authorities in circles and reorganizing the pyramidal speech into branches or departments that were again subdivided. The dialogical function would be provided by the intersection of the specialized layers.

This new communication diagram proved to be more productive and increasingly created more information. However, the complexity of the system brought the overspecialization of the relay as a collateral and unexpected effect, given that every dialogical circle processed a specific code to synthesize new information only produced in view of specific purposes. This continuous coding resulted in information chunks that were only understandable to experts of a branch or department familiar with that codification, and were entirely incomprehensible to the rest of society, thus paradoxically bringing back the need for sacerdotal authorities in the communication diagram. From arts to nuclear physics; from biology to technology, the messages coming from several trees were no longer comprehensible to non-experts, and lacking a background of common knowledge, treelike speech shaped a communication diagram that was objectively irrational.

According to Flusser (1998), it was during this crisis that the mass media emerged and developed. The purpose of mass media was to translate the messages from specific social branches into decipherable codes. Flusser argues that these transcoding devices were responsible for yielding the amphitheatrical speech, which is a communication diagram that radiated information throughout the social system and which characterized contemporary society. Media are described as closed systems that transcode the messages emanating from various trees of science, technology, or art to streamlined and extremely simplified codes. The transcoded messages were then broadcasted into space, so that receivers only had to tune or synchronize specific frequencies and channels to capture the mass-distributed information. The amphitheatrical modality reshaped the social system by combining the smooth operation of treelike models with multidimensional media distribution, thus giving form to the mass media society.

THE CULTURAL FORM FOR THE TECHNOLOGICAL SOCIETY

Luhmann and Flusser converge on the understanding that the reorganization caused by computer communication will create a new cultural form. The processing power of computers

and digital networks gives rise to a semantic catastrophe that resulted from digital devices joining the communication process. Communication ceases to be an operation performed exclusively by humans towards humans to be incorporated into the routines of programming and distribution. Computers and information networks changed the communication scenario by adding a virtually unlimited capacity for storage, processing and connectivity with technological advancements that continue in endless progression.

The emergence of a new cultural form becomes visible once computers start to actively participate in the communication process. The outcome of the interconnection of computers was the surrender of human consciousness simulation and the creation of a parallel social order. Even though Luhmann focuses on three forms in the cultural history of technology that handled the surplus of meaning, these examples do not comprehend all social catastrophes nor are they restricted to Greek, Roman or modern European civilizations. Each cultural technology brings a specific problem regarding the codification of meaning. This applies to letters, films, television, and mobile phones, but also to trains, cars, and airplanes. Each of these technologies overburdened society with an excess of possibilities that surpassed the existing meaning processing system.

But the catastrophes resemble each other. Aristotle's idea of telos allowed the selection of information by questioning, in oral and written communication, the meaning, purpose and objective of the message. Also Descartes' principle of a self-referential consciousness allowed a new set of selections by introducing the possibility of a self-referential mode of awareness, formed through an accurate selection of the available information and through the attribution of specific meanings that did not threaten the subject's identity. Likewise, the cultural form of technological society must also make social life easier to handle by allowing the objective dismissal of specific information (Baecker, 2004). Nonetheless, neither offered Luhmann an ultimate account for the cultural form of the technological society. Hesitating between the concepts of complexity and form, the German sociologist did not point to any author, concept or idea that could accomplish this function.

One interesting possibility is the concept of complexity. The concept took shape during the second half of the 20th century, the same period that computers began to be used extensively and that cybernetics evolved to become a scientific paradigm. Complexity implies the idea that something new happens in successive stages in time within the same system, but without the possibility of assigning the changes to unique conditions or particular causes, which consequently gives rise to a perspective on dynamic systems. Complexity is also an outcome of

Spencer-Brown's concept of form: a component that is eventually tacitly or explicitly admitted, but whose existence had been suspected long before the concept was adopted (Ashby, 1956). The concept also refers to the topology of social relations, which consists of a large number of heterogeneous variables connected in a highly selective manner. A cultural form presented by complexity would be an invitation to observation rather than explanation; a limited selection of information rather than a full set or a random subset of data; an understanding that systems change constantly and, finally, a contingent observation whose solutions are always temporary.

Regardless of which idea will eventually prevail in handling the current surplus of meaning — be it the concept of form, system, complexity, or any other idea, image or sensation that can address the problem — the cultural form of technological society should be a principle that provides better management of the surplus of meaning that computers and the internet brought. It should be a form that thoughtfully rejects — depending on the context in which we are and the control domains we are part of — most of the meaning expressions to which we are subject on a daily basis. At the same time, this cultural form should help us with the determination and selection of the available meaning. This cultural form should also guarantee that the rejected offers have a permanent horizon of inclusion in the social structure. As a result, this cultural form should be a force that creates stability between selected and excluded forms, consequently containing the surplus of meaning.

After all, this is the purpose of cultural forms. They filter and select meanings through a combination of rejection and acceptance. Luhmann's hypothesis is that the technological society needs a guiding principle that establishes a stable regime for information and meaning in the society of computers, the same way the telos stabilized the writing society, and the equilibrium stabilized the printing press society. But the question is not yet settled: which cultural form will help us when using computers and having to decide, always immediately, readily and accurately, which images to look at; what requests to accept; which messages to respond to; which information to read? In short, which messages should be read more seriously and carefully and which should not? After all, which selections will be valuable in keeping up our fascination with machines, and at the same time protecting us from frustration and blocking the troubles that the technological society already created?

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This text was received at 27 January 2012 and accepted at 22 March 2012.