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## **Tropes, History, and Ethics in Professional Discourse and Information Science** (1)

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**Abstract:** This paper argues that professional discourses tend to align themselves with dominant ideological and social forces by means of language. In twentieth century modernity, the use of the trope of "science" and related terms in professional theory is a common linguistic device through which professions attempt social self-advancement. This paper examines how professional discourses, in particular those which are foundational for library and information science theory and practice, establish themselves in culture and project history--past and future--by means of appropriating certain dominant tropes in a culture's language. This paper suggests that ethical and political choices arise out of the rhetoric and practice of professional discourse, and that these choices cannot be confined to the realm of professional polemics.

### I. "Naming" Professions

#### Professional Self-Legitimation

Foundational professional texts are concerned with building or presenting a base of theory and practice, some of which extends into general culture for purposes of self-legitimation and self-advancement. The reasons for this social or cultural reflexivity are easily understood: professional practices and discourses exist within larger cultural spaces and so must justify their existence, their techniques, and their technologies in terms of larger social interests. This is particularly important when the social necessity of the profession is in question, when the profession is new, or when the profession finds itself located in certain social or historical junctures where its legitimacy is dubious or in crisis.

In this last case, professional discourse not only appeals to its own tradition, but also to dominant social forces in the present and the near future. It tends to give itself significant social importance and to project upon society a very generalized vision of the profession's own technologies and techniques. For example, one might argue that discussions of legal ethics within the legal profession and even in popular media depictions of lawyers are more reflective of the need for law to continually legitimate itself as the cornerstone for civic order than of attempts to correct corruption in the field or to provide true depictions of the process of law. Here, professional self-legitimation can be seen as serving not only a strictly "professional" purpose, but also a more general social purpose. By contrast, one might argue that such acts of professional self-legitimation are largely lacking in the

case of the engineering profession, save for certain specialized museums of engineering and industrial technology and at times of acute economic crises or growth (2) (3). In many ways, "engineering" is such a deeply held paradigm for professional and social "management" activities as a whole in modernity that it does not need further legitimation.

Professions obey the imperative for self-legitimation almost by instinct. They tend to be "positive" both in terms of their self-criticism and in terms of their methodological orientation, with a positive method supporting a positive critical tone by limiting critique to questions found within the accepted foundational parameters for a profession. Indeed, foundational self-criticism is not a dominant trait in the theory, method, or practice of professions. In professions, self-criticism tends toward the furtherance of the profession's foundational beliefs, and it tends toward corrective rather than fundamentally critical discourses. Following the lead of professional methods, professional ethics, too, tend to be either prescriptive or proscriptive, aimed toward aligning practitioner behavior with codes for professional action, rather than in engaging in "deconstructions" of foundational theory and discourse by critical historical, philosophical, or rhetorical means.

Ostensibly, European documentation arose out of an overload of printed information at the turn of the century. This, however, is only half the story. Information science and information culture--from Melvil Dewey to Otlet to cybernetics during the Cold War to recent visions of virtual utopias (e.g., Pierre Lévy's notions of "the virtual" and of "collective intelligence") (4)--has always been concerned with information as more than documents. Dewey's Columbia School of Library Economy, for example, had as its goal not just the management of documents, but the management of labor toward the efficient delivery of knowledge. Professions are utilitarian institutions and historically have often connected their rhetoric to dominant social institutions, language, and agendas, notably within modernity through the tropes of "management," "efficiency," "systems," and above all, "science" (5). Professions attempt to name themselves through the language of privileged institutional bodies and social contexts. And they attempt to be the first to name what they believe are events of social importance, with these latter acts of naming often leading to social self-advancement.

### "Science" and "Information Science"

At least in an epistemological sense, information science, since Dewey at least, has sometimes positioned itself as a behind-the-scene queen of the sciences. This is true whether we understand information science as the task of organizing knowledge (a task which the great classification theorist W.C. Berwick Sayers saw as echoing the work of God (Sayers, 1926, p.63)), or, as in the documentalist Suzanne Briet's work, as the "dog on the hunt" ("comme le chien du chasseur") leading the master ("science") to textual sources for the advancement of knowledge (6). As in the case of European documentation, information science has sometimes understood itself as the leader of science, indeed, as the science that allows science to appear.

Historically, as well as rhetorically then, the relationship of information science to science can be characterized as synecdochical (7). This synecdochical relationship is based on structuralist conceptions of "naming" that we would recognize in library and information science in terms of indexicality. The post-war French documentalist Suzanne Briet showed amazing acuity (not to mention political ken) when she argued in her manifesto *Qu'est-ce que le documentation?* that documentation is characterized by indexical relationships. What is significant in Briet's writing is that indexicality not only characterizes the practice of documentation in regard to the organization of documents, but it also characterizes the relationship documentation has to "science" as a cultural and social phenomenon (8).

"Science" is, of course, the legitimating trope par excellence in modernity. It would be difficult not to say that all professions in the 20th century desire to be named as "scientific." Within a "universe of knowledge" or "science" (according to the manner through which "knowledge" was understood by Wilhelm von Humboldt in his founding of the modern university as "scientific" (Wissenschaft)) professions attempt to be named--that is to be designated as significant within "scientific" knowledge, organizations, and social practices. What it means to be "scientific," however, changes historically. As Briet repeatedly reminds us in *Qu'est-ce que le documentation?* and elsewhere, "documentation is a technique for our time"--that is, it is a scientific technique for a certain "scientific" cultural period. "Science" is a cultural and historical term which a specific profession attempts to measure and locate itself within.

As Slavoj Žižek argues regarding contemporary discourse about "the virtual," popular discourses on information tend to point not only to the present, but toward a hoped for future as well (Žižek, 1997). Discourses about the "information age"--discourses repeated in only slightly different forms several times in the twentieth century--are often symptomatic of both the social structure from which they issue and of cultural attempts to advance beyond that structure. In this manner, documentation both projects itself as a symptom of "science" and also as an attempt to advance or fulfil science. As in Briet, documentation is both a servant of science and it also leads science, ahead of it "like the dog on the hunt." As such, the synecdochical relationship between information science and "science" (9) must be recognized as actively historical. Information science both serves and leads "science" by creating the social conditions for "science." We will later note a very concrete example of such historicizing in Briet's discussion of the role of documentation in third world "development."

### "Science" and Social Power

The alliance between professional discourses and often conservative and dominant ideological and cultural forces is not just a result of accidental professional relations or accidental class alliances. The historical narrative of progress that characterizes much of the rhetoric of professions tends to protect professional theory and practice

from fundamental self-critiques that might jeopardize their "scientific" advancement. Historical contingency here is partly a result of rationalistic narratives and self-narratives. The circular relationship that professions set up between their foundational discourses and rationalist political, social, and historical narratives leads to a body of "practical" concerns that then, in turn, prevent professional theory and practice from too radically engaging established political and social discourses. Professions are "practical" and, indeed, are fully "professional" when they act within widely recognizable, and thus to a certain extent, socially privileged, discourses and institutions. And professions become "unprofessional," wandering away from "practice" into "pure" "academic theory" when they attempt to intervene in the rationalist discourses that characterize established social and political systems, as well as their own profession.

These self-protective tendencies mean that both the "theoretical" and the "practical" problems of a professional field cannot be critically studied only within that field. Critical studies of professions need to reach out to a broader social and cultural context in order to understand professions as products of social forces other than themselves. And because the term "science" in professional discourse often is fluid and transient in terms of its meaning, this term also can not be used as a dependable standard for assessing a professional field.

In modernity, at least, the term "science" in the professional arena appears as the set of social structures, organizations, and forces which the profession serves and whose power it works toward maintaining and establishing as the future. In as much as those larger structures, organizations, and forces change, the professional field then reacts, and this is indicated, for example, in its foundational rhetoric. Thus, for example, the term "science" remains of central importance in the foundational texts of the European documentalists Paul Otlet and Suzanne Briet, even though the cultural meaning of "science" shifted during the seventeen years between their respective foundational works, *Le Traité de documentation* (1934) and *Qu'est-ce que le documentation?* (1951). For both these advocates of documentation, "science" constitutes the horizon for theoretical and practical knowledge and it is also the guarantor of what is understood as real within modernity, even though the meaning of "science" in each of these texts reflects different cultural connotations for the term between the pre-war and the post-war periods. For Otlet, the term "science" was positivistic, signifying "factual" representations. (And since these "facts" were known only through their representations, such "facts" were really "universally" meaningful representations--which is to say that knowledge was normative aesthetic presentation.) For Briet, the term "science" signified the production of "facts" through "scientific" organizations and cultures.

The term "science" in professional discourses is not value neutral. It does not refer only to exact processes, specified techniques, and formal methods. In modernity, being "scientific" is an important historical and social index of a profession's social status and roles. And as a key term in modernity, "science" is a harbinger of both

future options and those possibilities that will be passed up as "non-scientific" or "non-practical."

In a previous article, I have addressed the construction of social space in Paul Otlet's writings (Day, 1997). There, I argued that Otlet's conception of documentation as "scientific" according to the "science" of his time led to a vision of knowledge as an evolving network of known facts and a social vision of a "global community" of knowers. In the next section of this article I would like to examine a few of the professional, political and historical practices that Suzanne Briet advocates under the guise of "science." Briet's work is important because it constitutes not just theoretical speculation on the role of indexicality in documentation, in particular, and in professionalism, in general, but because it references a cultural context that produces this role and some of the normative political practices and social implications that are its results. Her work is, therefore, useful, both theoretically and as an historical example, in examining our own professional theories and practices in the age and rhetoric of "the virtual" (10) where many of the same economic and political imperatives are at play and where tropes about "the global," "democracy" and the development of standards for "communicability" continue to play an influential role.

## II. "Science" and Information Culture in the Post-War Period

During and after the Second World War, especially in the allied countries, the epistemology, social meaning, and institutional arrangements of "science" underwent a monumental change. Simply stated, a non-industrialized conception of science became inconceivable, as universities, industry, and government formed what Gordon Adams has called the "iron triangle" (cited in Edwards, 1996, p. 47). Communications and information technology became absorbed within this iron triangle and became under the metaphysics of systems theory ever more directed toward creating networks between humans and humans, humans and machines, and machines and machines, all toward the goals of economic, cultural, and military domination. The implantation upon the social and individual body of a semiotic of rational-technological control for the supposed purpose of the social and individual body's own defense became the hallmark of the Cold War's mode of total warfare. (See, Donna J. Haraway's "The High Cost of Information in Post-World War II Evolutionary Biology: Ergonomics, Semiotics, and the Sociobiology of Communication Systems," and Paul N. Edwards, *The Closed World: Computers and the Politics of Discourse in Cold War America.*)

Consequently, as was mentioned earlier, documentation, viewed as a science, emerged after the war in the works of Suzanne Briet as being a new sort of "cultural technique for our time." Briet's book *Qu'est-ce que le documentation?* and her shorter papers no longer stress the finding, collecting, and public transmission of knowledge through documentation, but instead, they stress the production and linkage of knowledge and knowledge industries. Service to the industrial sector is service to culture in general because, in "our [for Briet, "scientific"] time," cultural

and industrial development are indistinguishable from one another. Documentation, for Briet, is a professionalized activity within, and leading, science. The term "science" for Briet no longer connotes universal knowledge that should be publicly available (as it did for Otlet), but now connotes an institutional discourse exercised by powerful social forces. During the war years, truth, as it were, had become professionalized and culture had become authorized by "scientific" authorities and industrial techniques in the process of research and development. For Briet, through such agencies as UNESCO knowledge "advances" by education and by bringing science to educated specialists in the newly christened "underdeveloped countries" (i.e., the former colonies). Pre-war "progress" gives way to post-war "development" and documentalists advance like "new types of missionaries...in the wake of the driving force of the exploration vessel flying the United Nations flag" (Briet, 1951, p.41).

Of course, any missionary activity encounters problems of cultural difference including those missionary activities that attempt to advance science by allowing science to globally advance. Bibliographical standardization, technological standardization, technical standardization, labor standardization, and even "user" standardization were central issues for Otlet as well, as they were for Dewey before him, and it was part of Otlet's mission to write books that would prepare practitioners and users for the new information age of total standardization, systematic linkage, and efficient management. The issue of standardization becomes even more acute for Briet because no longer is the global ideal to be represented in a single Cité Mondial, but it is now to be international. Crudely, but accurately, we may say that whereas the 19th century notion of "the global" involved bringing the rest of the world to Europe through various representational mediums, persons, and artifacts, post-war "internationalism" was engaged with bringing the so-called "first world" to the so-called "third world" and "raising" the latter up to the level of industrial development in the former.

To accomplish this, standards for industrialization, and thus for literacy, were necessary. For Briet, not only technical languages and techniques needed to be taught through formal education programs and other institutes of certification, but there was also the fundamental problem of having a common lingua franca in the world. This problem of linguistic standardization is important because it demonstrates the range and depth of international standardization that documentation sought in order to spread "science" through international industrialization (11). In the early 20th century, the artificially constructed language of Esperanto was seen as one solution.

But with the failure of Esperanto, Briet writes in *Qu'est-ce que le documentation?*, one wouldn't dare attempt a universal language. Thankfully however, Briet writes, "the major languages, that is to say, English, French, and Spanish tend to spread and to become the indispensable interpreters of civilized people" (Briet, 1951, p.43). German, Briet writes, has "retreated," Russian is no longer in the forefront ["au premier plan"], and "the Orientals always speak their language and another

language" anyway (Briet, 1951, p.43). Briet's remarks suggest that documentation should organize its linguistic standards around a security-council of national languages representative of the dominant post-war European capitalist countries.

Science and information's progress (which, in Briet's work, is always bound together with the advancement of capitalist industries) needs the standardization of education and language in order to proceed. This leads to a number of "developmental" steps in order for science to take root in the third world. "Standardization" occurs in a number of steps, leading from linguistic and educational standardization, to documentary and communicational standardization, and finally to industrial standardization, so that third-world countries may be "developed" to the "scientific" level of first world countries through this process. The cultural standards and languages of Euro-American capitalist countries level and then prepare the cultural ground for documentary processes, and documentary processes then allow industry to flourish. Documentation is, thus, part of the rational leveling and reorganization of national and ethnic cultures that marks the "progress" of post-war capitalist industries and is part of the battle against other forms of social organization--both traditional and communist--that threaten it (12). For Briet, standardization is more than a major trope in the language of technology. Within the culture of "science" on the scale of "the global," standardization is an integral part of global cultural production. Documentation, which is always first and foremost concerned with standardization and linkage is therefore not only a vehicle for science, but is an exemplary symbol of science and the scientific age in modernity.

For Briet, standardization in language prepares for documentary standardization which prepares for industrial standardization, and all together these signify the larger "scientific" reorganization of "undeveloped" cultures, bringing these latter into the fold of the "global" age of science, information, and communication. Indeed, if one were to follow the logic of Briet's argument in *Qu'est-ce que le documentation?*, the so-called objective and disinterested world of "the scientist" seems to have a nose for those who won the war and who will pay economic dividends in the form of research funding and privileged social status. "Science," for Briet, is an institutional and cultural discourse which documentation both serves and leads. "Science" characterizes modernist industrialist culture and society through such terms as "dynamism," "standards," "precision," and "efficiency"--terms that are abundantly used throughout Briet's writings to characterize "science," modern culture, and documentation. In Briet's writings, these dominant "scientific" qualities of industrial modernity are tropes for the culture of professional documentation, and in turn, that professional culture is projected upon a social whole. Documentation, as a cultural leader, is thus assigned the task not only of documentary diffusion, but of ideological diffusion--both of "science" in general, and more specifically, of capitalist industry on a global scale.

### III. Theory, History, and Praxis in Information Science

## Professional Ethics: Between "Now" and "The Future"

As Jacques Derrida argued in his 1983 Cornell lecture, "The Principle of Reason: The University in the Eyes of its Pupils," in the critical gap between what a profession is and where it goes new questions arise--or should arise--for a professional school and for a profession. Professions have habitually taken an uncritical stance toward their foundations, and they have often uncritically adopted the rhetoric of dominant social, cultural, and political forces in order to construct and preserve their social power. Upon the rhetoric of "science" and "progress," professions have often harnessed their sleds, sometimes fairly careless of their destination. And in times of social crisis within the dominant vision these alliances may appear somewhat perplexing, producing louder and louder utopian claims against a barrage of social evidence to the contrary (13).

The answer to the problem of overdetermined social claims by professional discourses cannot always be said to lie in technical specialization, either. Such a retreat into a more "scientific" understanding of "information," for example, is particularly difficult given not only the wide social connotations of "information" (and, as I have suggested, the deeply rhetorical characteristics of "science" in the discourse of the professions), but also given the long and deep history of metaphor which haunts the core of information theory since the Second World War (14). Any strict division between a "scientific" understanding of "information" and a more general cultural understanding of "information" is problematized both by the historical, cultural, and highly literary functions of the term "science" in professional discourse and by the cultural history of the term "information" in modernity.

Professions appropriate dominant cultural tropes and narratives about the future for the same reason that they generally avoid foundational self-critiques: professions seek to maintain their social control through time and over the vagaries of history. Instead of understanding the distance between now and the future as opportunities for historical reflection and philosophical critiques which might generate alternative or even purposefully problematic models for the future (not only the future of the profession, but the future of various societies and cultures), professional discourses tend to leave foundational types of critiques that involve culture to discourses in the arts and to the theory of "pure" or "soft" academic disciplines in the humanities. The problem here is that, increasingly, the arts and these "pure" or "soft" academic disciplines are under economic and political pressures to become "professional" too. Under such pressures, the arts become markets for commodities of taste and academic disciplines become places for training in techniques and technologies.

Thus, what at first appears as a theoretical and methodological peculiarity of professional discourse now increasingly appears as a dominant institutional and social structure of which professional discourses were an early 20th century symptom. The term "science" in professional discourses plays many roles, one of the most important being social legitimation for the members of the profession and for



the profession as a whole. The tendency to relegate professional methods of research to positivist and quantitative methods and to adopt functionalist and operationalist models for not only research, but for the practice of the profession as a whole, may be read as symptomatic of a congruence between professionalism and the dominant tendencies of industrial modernity, rather than of an attempt to create critical distance. Such a congruence is particularly disturbing within the university, whose members have traditionally been granted a certain temporal and cultural distance (15) from the mainstream forces of production, because it suggests that the tradition of the university is decreasingly critical, and increasing collaborative, with dominant forces of social production.

One might argue that within a critical tradition, at least, the ethical imperative of the professions, and foremost of information professionals (particularly those involved with theory), should be toward opening other senses of the future than those that we are told we will inevitably get in the destiny of "our [information] age." As we have seen, Briet's work engages in a form of historicism that is not critical, but instead, incorporates within its own theorization the perpetuation of the historical narratives and the historical modes of production of industrial modernity in general, and of global capitalism, in particular. From this historical example, it is difficult not to see contemporary rhetoric about the "information age" as perpetuating a similar type of historicism, where claims about the necessary proliferation and omnipresence of communication and information technologies on a global scale extend Briet's notion of documentation as a "technique for our time" to a late industrial/postindustrial period of global capitalism.

A critical ethics is a politically engaged ethics because it seeks to critically intervene in accepted discourses and futurologies about the nature of society, culture, and politics. In terms of constituting a professional discourse, a critical ethics requires the critical engagement of a profession's own discursive foundations and methods, especially in so far as those foundations and methods have traditionally been conservatively produced and examined. Consequently, in so far as such an ethics engages in critical historiography, it requires that the examination of a profession's history occur beyond the prescribed limits of the profession's self-proclaimed foundations and founders. A critical ethics and politics attempts to critically engage the historical projections and self-narratives that a profession articulates, in so far as those projections and self-narratives are grounded in overly determined narratives about the past, present, and the future and in so far as those narratives are products of unexamined social alliances. In between a certain past and a certain future, critical engagement attempts to acknowledge the problematics of the present--an uncertain present that is the true nature of all pasts and futures as well.

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Endnotes:

1. An earlier version of this paper was delivered as a seminar for the Institut National des Techniques de la Documentation (INTD) at the Conservatoire National des Arts et Métiers (CNAM), Paris, Dec 4, 1998. I would like to thank Professor Yves Le Coadic for hosting this lecture and to gratefully acknowledge Professor Michael Buckland's lecture about vocabulary which preceded my presentation.

2. International industrial exhibitions in the 19th century and "World Fairs" in the 20th century constitute interesting examples of the use of popular culture for purposes of professional and corporate self-legitimation and self-promotion. For a collection of critical histories of industrial museums and fairs, see Brigitte Schroeder-Gudehus (ed.), *Industrial Society and Its Museums*.

3. The heroic depiction of engineers in Soviet Realism and their depiction in what one might call "Capitalist Realism" during the 1930s in the United States constitute interesting examples of the social promotion of engineering in a period of rapid industrialization or in a period of economic depression, respectively.

4. Pierre Lévy, *Becoming Virtual: Reality in the Digital Age*; *Collective Intelligence: Mankind's Emerging World in Cyberspace*.

5. By means of such tropes professions can socially appear, link with one another, and then be absorbed into new disciplines, often making strange bedfellows. One could, for example, trace the tropes of "systems" and "flows" as they structure early Freudian psychoanalysis based on an electro-chemical model, only to be later rejected by Freud, but then picked up again by post-war anti-psychoanalytic psychiatry (influenced by information theory and cybernetics) toward constructing an operationalist model for the use of psychotropic drugs in psychiatric treatment. (See the emerging essays of the sociologist, Jackie Orr, on the pairing of information theory and psychiatry in the postwar period, especially in relation to the phenomenon of "panic.")

6. "Elle doit être à la pointe de la recherche et même dans une certaine mesure--comme le chien du chasseur--tout à fait en avant, guidé, guidant." Suzanne Briet, "Bibliothécaires et documentalistes," *Revue de la documentation* XXI (1954), p.43

7. Synecdoches (or metonyms) are figures of speech by which a part is substituted for a whole, a whole for a part, a species for a genus, the genus for a species, etc.. The relationship pointed to in this paper is that of the substitutability of "science" and "information science" for one another in certain foundational texts in Library and Information Science (broadly defined), and the professional, social, historical, and political ramifications of these substitutions.

8. Briet makes her initial point by analyzing the naming of a new species of antelope within organizational and documentary systems. The naming of the antelope takes place within such systems, and as such, is also an index of the various relationships of such systems as they operate within a social structure known as "science." (Though the term "scientific" is also used in Briet to characterize Western culture as a whole, especially after the Second World War.) Curiously, over 40 years later the sociologist of science, Bruno Latour, made a very similar argument using an almost identical rhetorical strategy to the opening pages of Briet's work in his article, "Ces réseaux que la raison ignore: laboratoires, bibliothèques, collections" (though in other works, Latour puts more stress upon the "pragmatic, rather than

the structural, relations of "scientific" bodies and practices to one another). On Briet's antelope see Michael Buckland, "What is a 'document'?"

9. Here, as throughout this paper, I am reading European Documentation within the history of Information Science. This reading is consistent with recent historical scholarship on European Documentation in the field of Information Science.

10. For a critique of the rhetoric of "the virtual" in the work of the French multimedia theorist, Pierre Lévy, see my review of two of his recent books, "The virtual game: objects, groups, and games in the works of Pierre Lévy" in *The Information Society* (forthcoming, 1999).

11. While Briet's concern was the global adoption of privileged languages toward certain economic and political ends, this concern must also be understood in the context of a larger concern regarding the standardization of language at the level of rhetorical form, a concern that has permeated science and industrial production since, at least, the 18th and early 19th century, respectively. For a discussion of the introduction of standardized rhetorical forms into business communication and the social consequences of this, see Jo Anne Yates, *Control Through Communication*. Michel Foucault addressed the construction of science according to classification, systems, and supporting rhetorics for these epistemes in *The Order of Things: An Archaeology of the Human Sciences*. This issue of rhetorical standardization must be understood to extend to aesthetic forms, as well, where it may be viewed today, for example, in the phenomenon of multimedia "convergence." In regard to multimedia convergence, it is necessary to understand that contemporary multimedia "convergences" occur toward the production of certain types of aesthetic forms, namely, normative representational forms and, moreover, toward "realistic" simulations. Thus "convergence" actually is a term that points more to the rhetorical and aesthetic goals for technological production than to a specific assemblage of technological apparatuses themselves (and that is to say that, "convergence" is largely symptomatic of cultural, social, and political production). Critical social analyses of contemporary multimedia "convergence" are, however, sorely lacking, except perhaps in some art practices which take the relationship of aesthetic form and social space as a primary problematic. "New media" critiques of multimedia convergence often fall short of adequate cultural, social, or political analysis because they fail to differentiate between media convergence and technological convergence.

12. Félix Guattari and Eric Alliez's essay, "Capitalistic Systems, Structures, and Processes" remains exceptional in its proposal that capitalist systems are essentially defined by the implantation of semiotic control within the social and personal body, thus encoding certain notions of value and desire within such bodies. Such an analysis, of course, has powerful implications for studies engaged with analyzing the relationship between information and communication systems on the one hand, and social and psychological forms on the other, during the Cold War and in the so-called postindustrial New World Order. The notion of "colonialism," here, of course, would take on the meaning of encoding not only national bodies, but individual ones, not only social habits, but psychological states.

13. Paul Otlet's two major opuses of the 1930s, *Traité de documentation: Le livre sur le livre: Théorie et pratique* and *Monde: Essai d'universalisme: Connaissance du monde, sentiment du monde, action organisée et plan du monde* might be read in this manner. Both are grandiose works with the underlying theme of the ability of science and documentary techniques and technologies to bring about world peace. Otlet's insistence on this theme runs throughout his oeuvre, but it seems to grow louder and more insistent as the 1930s come to a close and the congruence of technological determinism and national militarism becomes more pronounced both at the level of state rhetoric and in the embedding of communication and information technologies in social and cultural fabrics toward political control.

For contrary cultural and philosophical readings of "science" and information and communication technologies during this period in Europe, see for example, the works of Walter Benjamin and Martin Heidegger's "The Age of the World Picture."

14. In particular, I am referring to the central role which the conduit metaphor plays in information theory and in foundational LIS texts. Claude Shannon's famous "A Mathematical Theory of Communication" and Warren Weaver's commentary on that essay, "Recent Contributions to The Mathematical Theory of Communication" ground information theory in this metaphor from linguistics and from modernist culture at large. In another paper, I will address the presence and social consequences of this metaphor in their work and that of Norbert Wiener.

15. The social theorist's Theodor Adorno's complaints about his experiences at the Princeton Radio Project just before the Second World War, where he was asked to do (quantitative) "administrative research" on popular music, are symptomatic of the clash between critical theory and quantitative methods in the area of the social analysis of communications and information at a historical period that saw the recent emergence of the quantitative social sciences as an academic and political force. Adorno wrote of the surveys that he was asked to do in order to "analyze" popular music culture: "A small machine which enabled a listener to indicate what he liked and didn't like by pushing a button during the performance of a piece of music appeared to be highly inadequate to the complexity of what had to be discovered" ("Scientific Experiences of a European Scholar in America," 344). Part of Adorno's critique involves the inability of quantitative theory to analyze foundational, unconscious, and ideological components of a situation since it operates upon previously defined entities within an accepted context of possible relations.

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