THE POWER OF IMAGES:
A DISCOURSE ANALYSIS OF THE COGNITIVE VIEWPOINT

by

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Introduction: Discourse Analysis

The continuing debate about theory in library and information science (LIS) is usually waged as a confrontation between rival epistemological positions, each claiming to provide the most fruitful theoretical foundation for knowledge production in a contested field. The more than 50 year-long history of these rivalries has been thoroughly documented by Schrader [1]. The debate flourishes to the time of this writing, as evidenced by, for example, the activities of the "Special Interest Group on Foundations of Information Science" within the American Society for Information Science, and the International Conference on Conceptions of Library and Information Science convened in the summer of 1991 in Tampere, Finland. Whether arguing as a "qual" or a "quant", in Ellen Altman's [2] charming choice of terms for qualitative versus quantitative approaches to library research, or as a devotee of either the physical or the cognitive paradigms recently identified by Ellis [3] as the main rival candidates in information retrieval theory, or struggling "to secure a degree of legitimacy" for hermeneutical methods in LIS research (4, p. 229; see also 5), the stakes in the contest are the theories, together with their associated methods, which most appropriately define, what Wersig and Neveling [6] call "the phenomena of interest to LIS", and generate knowledge about them.

Very often, these epistemological rivalries reflect differences in attempts to define "information", that notorious keyword of contemporary LIS literature. The record of this definitional enterprise, however, has not been stellar. From his definitive study of the definitional literature of information science, Schrader [7] concludes that it has brought forth only "conceptual chaos" (p. 198). Far from bequeathing anything resembling the coherence of rival "paradigms" or, *pace* Rebecca Green [8], "the

profession's cognitive models of information and of the information transfer process" (p. 130), the definitional literature consists in "manifestations of linguistic fashion", reflecting a "rhetoric of labels" rather than anything approaching adequate domain definition (, p. 198).

Concurrent with these theoretical explorations, LIS discourse is also characterized by a curious cohabitation of tendencies which on the surface seem, if not logically irreconcilable, at least curiously wed. The first is the recurring theme of theoretical sterility, whose spirit is perhaps best captured in William Cooper's [9] well-known remark on retrieval theory: "Deep down . . . it's shallow" (p. 201). Yet far from blunting the theoretical stimulus, lamentations of sterility coexist happily with an extraordinary flowering of the speculative imagination. High-flying LIS researchers swoop indiscriminately down upon the theoretical terrain, colonizing Popperian worlds, or cannibalizing hermeneutics, phenomenology, general systems theory, symbolic interactionism, decision theory, existentialism, structural-functionalism, cognitive science, or philosophy of language, to name just a few of the theoretical models on current exhibit in LIS research literature. The extraordinary license enjoyed by LIS theory is nowhere more clearly illustrated than the recurrence, at the 1990 ASIS conference in Toronto, of a conceit already debunked by Schrader [10] in his keynote speech to the 1989 conference in Tampere, that the millennium of theory might easily be realized if only the LIS community would accept the manifest truth that "information" is synonymous with life itself.

The curious and continued coexistence of figures of sterility and fecundity in LIS theoretical narratives might be sufficient reason for pausing to reflect on LIS discourse as a phenomenon, rather than to enter heroically into the theoretical lists as the champion of a specific candidate for theoretical supremacy. Perhaps it is time to ask, what discursive procedures support this odd couple? Can more sense be made of the debate by charting the changing patterns of theoretical discourse itself, its expansions and contractions, rises and falls, evolutions and devolutions, the appearances, disappearances, and transformations of its leading tropes, than by justifying specific theoretical claims of truth or significance? If we take Schrader's notion of linguistic fashion to heart, are we then not challenged to at least investigate the possibility that fashions in LIS theory are perhaps as firmly grounded as the mutations of cultural taste? And if LIS theory is indeed a rhetoric of labels, then who is persuading whom, of what, and why?

Questions such as these suggest, as an alternative way of coming to understand LIS theory, that we shift our focus away from disputes over the truth or meaning of theoretical proposals, towards the *existence* of LIS theoretical discourses, treating as data for investigation and analysis the ways in which

key theoretical ideas are talked about. Such a shift would involve pursuing implications of the fact that theory itself is a social practice. As a process of intellectual labour, both it and the specific theoretical objects it generates are configured by social, economic, political, and cultural forces. From this perspective, the contests for power which configure and constitute the social world generally are no less implicated in the practices of theorizing in LIS than in any other social practice. The hypothesis implicit in this shift of focus is that what appears as a figure of intellectual chaos against the ground of adequate domain definition will emerge as a set of comprehensible patterns against the ground of discourse analysis of LIS theory.

In her *Powermatics: A Discursive Critique of New Communications Technology*, Marike Finlay [11] provides a useful description of discourse analysis:

> . . . discourse analysis is the study of the way in which an object or idea, any object or idea, is taken up by various institutions and epistemological positions, and of the way in which those institutions and positions treat it. Discourse analysis studies *the way in which* objects or ideas are spoken about (p. 2).

To treat LIS theoretical discourses as phenomena, to concentrate on their existence rather than to contest their truth or meaning, allows us to situate their claims in an historical context, bringing to light the politics involved in the construction and interpretation of their fundamental concepts. Information, information needs, knowledge organization, and other fundamental LIS concepts do not denote simply given and unproblematic notions divorced from specific interests. Furthermore, the methodologies which deploy these terms are not neutral, universal, or fair. Instead, like those treated by Nancy Fraser [12] in her discussion of discourse analysis, they are "skewed in favour of the self-interpretations and interests of dominant social groups" (p. 164). Mark Poster [13] makes the same point when he observes that ". . . discourses and practices are intertwined in articulated formations having the domination of one group over another as their primary trait" (p. 52). The promise of a discourse analysis of LIS theory is to uncover, in Fraser's terms, "the contextual and contested character" (, p. 163) of its theoretical constructs.

Foucault [14] has pointed out that discourse analysis is especially appropriate to disciplines with a "low epistemological profile". His comments regarding the aptness of psychiatry to discourse analysis apply equally to LIS:

> . . . the epistemological profile of psychiatry is a low one and psychiatric practice is linked with a whole range of institutions, economic requirements and political issues . . . Couldn't the interweaving effects of power and knowledge be grasped with greater certainty in a case of a science as 'dubious' as psychiatry (p. 108)?

Like psychiatry, LIS practice is closely linked with a wide range of institutions situated within conflicting economic and political agendas. At the same time, LIS theory is so extraordinarily unreflective about its institutional underpinnings to warrant the hypothesis that power's invisibility is the consequence of a deliberate discursive strategy. Any analysis of the relations between knowledge and power in the discipline is long overdue. No more fitting indication of this imperative can be found than the apologetics for corporate crime retailed at the 1990 ASIS conference in Toronto where, in a panel on ethics for LIS professionals, the examples cited to motive professional responsibility to corporations were the Bhopal, Love Canal, and Exxon Valdez disasters.

The space of this paper does not allow a full analysis of the ways in which specific and identifiable relations of power are inscribed in the whole of the theoretical discourse of LIS. My aim here is, instead, to concentrate on a specific case of LIS theorizing. I will argue that the recent candidate for theoretical supremacy in LIS known as the "cognitive viewpoint", consolidates on academic terrain those power relations which constitute information as a commodity, and persons as surveyable information consumers, within market economy conditions. In brief, the claim put forward here is that the cognitive viewpoint performs, in Kevin Wilson's terms [15], "ideological labour" for unarticulated corporate interests.***The Natural-Scientific Discursive Context of the Cognitive Viewpoint***Because the main features of the cognitive viewpoint are readily available in the literature, it is unnecessary to summarize them here. It should, however, be noted that this paper restricts itself to texts which proclaim the cognitive viewpoint as theory rather than as practice, following the articulation of its own self-consciousness as theory provided in Belkin 1990. More recent developments have modified its applications without altering its fundamental theoretical vision. The purpose of this section is to show that the cognitive viewpoint is configured according to explicit discursive regularities setting out appropriate theoretical discourse in general. Thus it fits into a discursive space already prepared for it in specific and determinable ways.

Information science's yearning for theory is clearly expressed in seven papers by Brookes (16 ,17, 18, 19, 20, 21, 22), who is cited by Belkin [23] as one of "the first proponents of the cognitive view in information science" (p. 12). In the first of these [], he endorses Mikhailov, Chernyi and Gilyarevsky's "four basic needs" of theory: a unique subject area, a set of basic concepts, a set of fundamental laws, and an explanatory theory (p. 115). When these needs are not met, the information scientist feels "exposed", "sensitive to sinister probings", administered by those who "have peered rather skeptically into the shadows . . . to see what kind of science might be found there" (, p. 42). The cure is

a "centre and root of information science", the object of a "world-wide consensus on which the desired development of theoretical information science depends" (, p. 115), and which will pass the scrutiny of a fraternity of philosophers of science, from Aristotle and Euclid, Bacon and Newton, Popper and Kuhn, to J. R. Ravetz (, p. 42-44).

The yearning for theory expressed by Brookes is not, of course, a yearning for just any theory. On the contrary, his theoretical desire is expressed through a discourse that speaks about information in the voice of natural science. We are therefore presented with a series, an order, a hierarchy, an arrangement, a teleology, an evolution, referred to as "a continuous spectrum of information processes" (, p. 119), in which the dominant metaphor is Shannon's: the series is governed by the figures of a "modified" and "re-labeled" Shannon model (, pp. 44-46) of "message stores", "encoding devices", "transmitters", "detectors", "decoders", and "receptors". Throughout, information is situated within a discourse of natural processes, whether "transmission" of "neural electrical pulses", "biochemical transmissions that occur in the cell" (, p. 118), or "ranges of physical signals" impinging upon sensory organs. The evolutionary series begins with "physical processes", not excluding "the absorption of energy and nutrients". The absorption of food by "simple unicellular creatures" becomes a primitive information process ** "the basic Shannon information system limited to two possible discrete signals" (, p. 120), i.e. food and nonfood. When "eventually man emerged from among the higher animals" (, p. 121), the natural-scientific metaphors continue; human understanding is conceived as a higher-order "information process", a "cognitive interpretation" of "signals" by a "cortex" (, p. 118; , p. 46). The apogee and final *telos* of this naturalistic movement is the computer metaphorized as an "exosomatic *brain*" (, p. 122), presented as a parallel, in the cognitive realm, to such previously enumerated extensions of human sensory faculties as the microscope and the telescope (, p. 122; , p. 47), themselves spoken of as products of a natural evolution of information processes. Indeed, evolution itself is regarded as "more effective information-gathering, processing and exploiting" (, p. 121).

The coda of this naturalistic movement is reached in its metaphysical *Aufhebung* as Popperian World 3, presented simultaneously as a result of natural processes ** "objective knowledge as part of that continuum of information processes which spring from the evolution of life on Earth" (, p. 127) ** and as the result of personal philosophical excogitation ** "I have been driven down, level by level, to the rock-bottom of human thought ** to metaphysics" (, p. 126). World 3's allure, like that of the natural world, consists in the security of an objective reality, with truths waiting to be discovered, and, crucially for information science theory, a world which information scientists can claim as their own

unique intellectual terrain: "such a study would be analogous to our exploration of the physical world. . . . World 3 presents a whole new world for us to explore" (, p. 130).

This natural-scientific discourse configures meaningful theory in LIS by regulating what counts as acceptable and unacceptable theoretical talk about information. Much would be missed by its dismissal as another manifestation of the familiar and beleaguered dogma of empiricism, often and properly criticized as the naïve belief that any respectable information science must restrict itself to the methods of the physical sciences. One would thereby fail to appreciate that the "natural science" presented in this discourse functions strictly as metaphor. It is beside the point of this harmless and rather quaint narrative to object to its details, to question its evolutionary story, or to raise hackles about its naïve sketch of science as a decoding of signals sent by an obliging natural world. The force of this discourse lies in the power of its rhetoric, in the beguiling naturalistic voice which recites these stories about information with confidence and authority, inviting the reader to mimic its cadences. Its crucial rhetorical move consists in the assimilation of human understanding, and the production and use of texts, to processes involving natural objects and described as natural events. The rhetorical segue from impulses, transmitters, receivers, decoders, and the like, to human uses of documents, and from unicellular creatures to *homo erectus* to the exosomatic brain, does not function as *reportage* of scientific research, but as the constitution, by their position in a naturalistic specific series and hierarchy, of stable and objective "knowledge structures", made available for information science analogous to the availability to natural science of the stable and objective elements of the evolutionary series. The space cleared for theory by this discourse unveils a familiar and stable terrain: an open horizon of natural objects, including some new furniture, to be sure ** propositions, meanings, speculations, hypotheses, in short: "information" ** yet all equally available to unmediated scientific representation (even if some new statistical calculi need be developed).

Taking Belkin and Robertson's "Information Science and the Phenomenon of Information" [24] as one of the paradigmatic texts of the cognitive viewpoint, we find a reprise of this natural-scientific narrative. The principal figures of Brookes's series of information processes are replicated: biological information, noiseless and noisy channels, sense organs at work structuring incoming data, single-celled organisms busy at their simple binary classifications, and, at the apex of the hierarchy, the creation and use of documents. Situated firmly upon the site prepared for information science theory by Brookes, this highest level is spoken about as a member of a series of natural-scientific events.

The cognitive viewpoint's distinctive contribution to this narrative consists in its construction of a new discursive object, which it calls "structure" and "image". It functions as a notation, or a method of description, of each stage of the series. "Structure" appears as a set of possibilities, an achievement of sense organs, a function of the by-now familiar unicellular organism, an achievement of the mind resulting from the mind's acting either upon the products of sense organs or upon its own mental accomplishments, a text, a textbook, the "tacit knowledge" shared by members of a social group, or formal theories or models. Images and structures are simply inserted into the discursive space of natural objects already prepared by Brookes.

Although structure is first conceived by Belkin and Robertson as a category, it is later delivered as a "specific entity". Talk of transmission through channels now becomes talk of images acting upon images. There is the cat's image of its surroundings, constituted by optical systems and "a sophisticated set of traps", the sensual and conceptual images "inside the mind of the organism", especially in the "higher animals", acting upon each other by a process of "cogitation" to generate new images (, p. 199). The important rhetorical move here, as in Brookes, is the segue from natural-scientific objects to document production and use. Its function is to underwrite a notation, or a form of description, according to which document production and use can be spoken of in the terms applied to the other elements of the series. Thus a metaphorical bridge shortens the discursive distance between amoeba absorbing nutrients and people reading books.

Images as mental entities, a mechanics of image production "in the mind", the images of cats and amoebae: these are fantasies harmless enough. But as research icons for LIS, they function to carve out a place for meaningful theory: document production and use will be regulated by the language of images conceived as natural-scientific entities, objectively given and scientifically representable. The following analysis of some of the discursive strategies specific to the cognitive viewpoint will amplify and reinforce this conclusion.

Discursive Strategies of the Cognitive Viewpoint (a) *Theoretical Imperialism*

The cognitive viewpoint presents itself neither as one theory among many, nor as a local theory of specific problems, but as a *total* theory for LIS, and as its *only* theory. It occupies not only the LIS homelands but also colonizes its hinterlands, silencing theoretical guerrilla movements by the imposition of a universal discourse. It claims to enable "the integration of various now more-or-less autonomous aspects of information science into a coherent whole" (, p. 202); it unites problems "within a single theoretical framework . . . allowing results from one of the problem areas to be applicable to

7

investigations in the others" (, p. 203); "We can now state that the basic phenomena of information science are . . ." (, p. 202). The fundamental theoretical task becomes translation and redescription of previous work and current problems. That the development of a discursive formation is at stake is made explicit: "*defining* and relating these phenomena in *terms* [my emphasis] of *structure* does lead to something new . . ." (, p. 202).

Imperialism of total theory, colonization of all LIS territories, their discursive appropriation through translation and redescription ** these tactics require the constitution of stable, objective, knowable, and fundamental theoretical objects. The cognitive viewpoint speaks about its primary theoretical object, structures of knowledge, or "models of the world" located "inside the mind of the organism", in precisely these terms. Its hospitality to variations among the methodologies it seeks to enable ** "[we] do not advocate any *particular* structural representation" (, p. 203) ** is an expression of its universality. Its promise of a unified knowledge of "a continuous spectrum of information processes" is grounded in its construction of all information processes as given mental structures.

The power exercised by any rhetoric of universality can be measured by the discourses it displaces. Insistence upon given "image-structures" as objects of objective investigation displaces, for example, discourses which bring to expression the fragments, conflicts, and contradictions in our "world pictures". The requirement that images be objectively given and *fundamental* theoretical entities exiles discourses in which the procedures of image construction, maintenance, and conflict can be expressed. Guarantees of explanatory theory can not be issued by a discourse of information processes as social practices played out on an agonistic field of conflicting and shifting historical forces, instead of mental events inside individual minds. The cognitive viewpoint's discursive imperative of a universal and totalizing theory is doubled in its talk of images as natural objects, and of "information" as a determinable change in mental structure.(b)*Referentiality and Reification*

Searching catalogues, bibliographies, indexes, electronic databases and library shelves; looking for a single elusive fact, photograph, film, video, or musical theme; tracing genealogies; pursuing trivia, consulting directories for food and shelter; generating mystification by "managing" the news and by blatant lies, eliminating significant political issues from the public agenda, manufacturing consent, substituting images for issues in political campaigns, distributing leaflets at demonstrations, deciding which manuscript will be marketed as the next bestseller, conducting advertising campaigns, privatizing public documents, sending electronic data between corporate headquarters and regional office; beaming

sports, movies, soap operas, sitcoms, commercials and pornography to and from satellites, distributing hatred and bigotry against minorities and the disadvantaged; constructing theories, supporting arguments, creating fictions; surveillance of foreign governments, economic competitors, employees in the workplace, political activities of domestic civilian populations; supplying enemy hit lists for friendly dictators; constructing images of the "real", the "just", and the "criminal" in the service of elites: all these and countless others amount to just a fraction of the "information processes" of our planet's advanced civilization.

A unified theoretical understanding of "information processes" is therefore clearly a tall order. It will depend upon disciplining this volatile mass of phenomena of possible interest by a discursive economy limited to the deployment of but a few key referring expressions, whose function is to construct a manageable set of stable figures and key structures as investigable objects of an objective world. Among the most important of these are "image", "model", "picture", "knowledge structure", and "knowledge store".

The extraordinary discursive economy effected by a reduction to these fundamental theoretical entities can be appreciated by a brief account of the cognitive viewpoint's narrative of their interactions. The theoretical world of LIS consists of images. There are "user" images and "generator" images. Users interrogate a given, objective, "knowledge store" (the depository of the generators' images) because they are aware of a "gap" or "anomaly" in their own images. Information scientists apply their knowledge of the user's "image-gap" in order to deliver appropriate gap-filling images from the knowledge store.

The reification required for the cognitive viewpoint's traffic in images is accomplished by specific procedures of investigation, analysis, identification, labelling, and classification. Once labelled as Anomolous States of Knowledge (ASKs), for example, procedures of classifying "the range of possible ASKs" (25, p. 193) can be mobilized. Descriptive notations, or "grids of specification", in Foucault's terms, are legitimated: the image is "a highly complex network"; "partitions of the image are possible and reasonable"; they can be "roughly grouped into two basic types: vertical and horizontal" (26, p. 189). "Image-" or "model-building" is supported by "functional codes", statistical methods, and graphic representations [27]. The discursive effect of developing special techniques to investigate image characteristics is to impose a rhetoric of information processes as changes in referents of theoretical terms.

Reification of images and the deployment of fundamental theoretical terms as referring expressions function, like theoretical imperialism, to displace alternative discourses. A discursive reduction to the interaction of two primary "structures" ** the user's "image", conceived as an individual mental representation of knowledge, and the "knowledge store", conceived as a depository of aggregated representations of knowledge ** excludes discourses in which the conflicting and contradictory forces aspects of the production, transmission, transformation, manipulation, reception, distribution, exchange, and maintenance of all that is collected under the rubric "information" can be articulated. The shortcomings of theories which frustrate the interpretation of information processes as social relations, or as the contested social practices of embodied social agents, have been pointed out by Lyotard [28]:

> the trivial cybernetic version of information theory misses something of decisive importance . . . the agonistic aspect of society. . . . What is needed if we are to understand social relations . . . is not only a theory of communication, but a theory of games which accepts agonistics as a founding principle (p. 16).

(c)   *Interiors: Representations and Processing*

The cognitive viewpoint's discourse is saturated with images, representations, reflections, and appearances. Users and generators represent the world, information scientists represent both users and the knowledge store, the knowledge store represents just about anything. Models model other models. Reality is dispersed among mutual reflections: "We . . . start from the image (. . . the mental conception that we have of our environment and ourselves in it), and consider the structures of the image itself. These structures may or may not represent reflections of real-world structures" (, p. 198). This statement is especially instructive as an example of how the discourse of representations begins to congeal, thickening with reflections and representations. Rather than represent its object directly, the image has elements, called "structures", which represent yet other entities, called "reflections", which in turn are capable of representing. Images have structures which represent reflections ** which themselves may or may not mirror "real-world structures". Representation is piled upon representation, until, under the appropriate heading "Why the Information System is Problematic", no fewer than seventeen types of representations involved in the process of asking for information are identified, albeit with the proviso that yet other must be left to one side in order to manage an already "highly complex situation" (, p. 115). We are caught in the LIS version of the hall of mirrors scene in *The Lady from Shanghai*.

Furthermore, representations are simultaneously presented as both the achievements and the means of "information processing". The metaphor is of a set of rules and procedures (a program),

whereby the "output" of an "information-processing device" interacts with both its "input" and its "program". Devices with different sets of procedures will process the same input differently, and, as Wilson puts it, the input has a feedback effect on the program: "The aim of a cognitive approach to information-seeking behaviour and information use . . . is to discover how the images and frames of reference of people . . . relate to the availability of information, how the choice of information is determined by the image, and how the information may change the image, or otherwise affect a frame of reference" (29, p. 200). (Sherry Turkle has documented the charms and seductions of this kind of discourse in *The Second Self* [30].) LIS theorists are thus enjoined to shift their attention "toward assessing the 'cognitive maps or pictures' that people entertain. What kind of picture does this person have of his situation? What kind of picture is he trying to make? What kind of picture does he require . . . " (31, p. 22). But at the same time that the program generates internal pictures, it is itself interpreted as "a system of categories or concepts which, for the information-processing device, are [sic] a model of the world" (32, p. 48, cited in , p. 11). Thus the Simi Valley jurors have different representations, or images, than virtually everyone else, because they "process" the same text according to their unique "world models". The crucial differences are on the inside, within the recesses of individual minds. Information science is regulated by a discourse of *interiors*, in which context and situation show up only as a set of causes determining the characteristics of interior representations, reflections, and appearances.

Legitimate theory in LIS thus silences what Donna Haraway [33] calls "cyborg voices", which speak about their transgression not only of the neat boundaries of the technological and the human (which are Haraway's concern), but also of the boundaries of the interior and the exterior so carefully constructed by the cognitive viewpoint. In a world of image manufacture and identity production, the border between interiors and exteriors is too hotly contested to bury their conflicts under a naturalistic discourse of world models processing images, and of "changes in structures of knowledge" as the "fundamental equation of information science". The reduction of the complexities of real practices, conduct, accomplishments, and actions of information seeking, information use, and "information processing" in a stratified social world, to a narrative of mental events, delivers LIS theory to specific interests with a large stake in the construction of human identity as essentially interior.(d)*Radical Individualism: The Erased Social Field Reconstructed as Image*

The ideology of interiors and its sharp opposition between inner and outer underwrite a related discursive strategy of radical individualism. The idea is best captured by Dervin: "each individual must

make his own sense. No outsider can impose sense" (, p. 28). The cognitive viewpoint's claim on the territory of the inner, interior reality, the "inner worlds of users, where most of the important acts of communicating ** interrogating, planning, interpreting, creating, resolving, answering ** are performed" (34, p. 217), is also a claim on the user's individuality, or specific and unique identity. Categories are deployed which "involve entering the world of users from actors' perspectives, from the inside" (, p. 222). The descent into interior, mental structures terminates at processes of individual sense-making and individual world-pictures. The inner is the real, the true, and the essential, because therein lies the beating heart of individual identity. External, system categories are epiphenomenal, defective, "inventions or constructions" (, p. 217), precisely because they are inadequate for understanding a user's individuality. Thus they "reify systems that create disparities between the haves and have-nots" (, p. 217), because they "predict aspects of information seeking and using that are constrained by societal structures" (, p. 226).

Ironically, when individuality is linked with truth and essence, it requires a discourse of universality. Thus LIS theory is enjoined to "formalize into system design . . . "universal aspects of the human experience", or "the universal human mandate to make meaning" (, p. 224), and to investigate the "acts of meaning that are necessary to the human condition" (, p. 226, footnote). Radical individuality turns out to be a universal characteristic.

Furthermore, when individual identity is constructed in terms of models of the world, it is positioned at the extreme point of a scale of subject positions. Thus Wilson and Streatfield [35], for example, can present their work as a study of "bureaucratic consciousness", thus extending the techniques of the cognitive viewpoint to the collective and corporate internal realities of individual subjects. Rennie [36] investigates the "world view", or "public image" (p. 221) shared by different individuals. Since Brookes's "fundamental equation" does not discriminate between them, the cognitive viewpoint is hospitable to collective as well as individual "knowledge structures". The differences between collective and individual image, however, remain differences in the properties of images of individuals.

A discourse of radical individualism, supported by polarizations of inner and outer, and of "sense-making" as a radically individual act, becomes ideological in a society of, to borrow from Chomsky, necessary illusions and manufacturing consent, where "information stores" and "information needs" are constructed and contested on behalf of specific interests, and where image production and manipulation are highly politicized social practices. If, as the cognitive viewpoint holds, interrogating, planning,

interpreting, and creating are individual, interior mental processes, then developing collective and public strategies for *interrogating* politicians, bureaucrats and the police, for *planning* shelters for battered women, for *interpreting* government propaganda and the assaults of advertising, or for *creating* alternative sites of power and influence ** all overt, external, public practices in a more-or-less systematized, collective, social arena ** become "information processes" ineligible for study by LIS theory except as reflections, representations, and images in individual minds. The erasure of the social thus becomes one of the cognitive viewpoint's most significant discursive achievements.

Erasing the social does not mean erasing talk about it. On the contrary, the cognitive viewpoint presents itself as especially sensitive to individual situation and context. But if analysis of situation and context must operate according to discursive oppositions between the fixed poles of inner and outer, or individual and system, then it has no resources to articulate the specific ways in which subjects act out their identities by transgressing these boundaries, by simultaneously fusing inner and outer, or individual and system. Subjects engaged in uneasy, hesitant, conflicted, and often contradictory processes of accommodation and resistance to socially constructed identities which incorporate elements of each pole of these simple oppositions have difficulty finding voice through the discourse of the cognitive viewpoint. The very real possibility, for example, that disparities between "the haves and have-nots", or the constraint of "societal structures" could arise from the social construction of "internal realities" as subjects of dominance can not be articulated by a discourse fixated on oppositions between inner and outer. Consequently, the social arena can be reinvented only as representation and reflection within individual psyches. Social factors are recognized only as characteristics and properties of individual images, world models, or inner realities. Social practices thus have but a noumenal reality in the cognitive viewpoint. They are accessible to LIS theory only as causes of miniaturized effects in individual minds. Brookes's "exosomatic brain" is the most telling metaphor of the reinvention of the social as an individual writ large.(e)*Knowledge*

Perhaps the most overt tension in the cognitive viewpoint is between the language of representation and the language of knowledge. On the one hand, a discourse of representations without referents; on the other, a discourse of "knowledge structures". First, talk about images: their identification, analysis, and harmonization with other images ** all quite detached from questions about the adequacy or the constitution of representation. Then, talk about knowledge: of texts containing knowledge, of users seeking knowledge, of users' images as knowledge, and of the information scientists' knowledge about users' knowledge and system knowledge.

This tension is a consequence of the logical differences between knowledge and representation. Suppose, for example, that a user, upon perceiving a gap in her world model of Soviet perfidy, produces a query which, after appropriate analysis and "harmonization" with the "knowledge store", elicits "information" from the *New York Times* and *Washington Post* on "yellow rain", an alleged program of chemical warfare perpetrated by the Soviet Union on Laos. The user is satisfied; the gap is filled. An efficient traffic in representations, an impressive dance of appearances, a proficient repair of a "gap" in a "model" has occurred, even though the retrieved text was propaganda produced by the Reagan administration in the early 1980s. The "yellow rain" in question was bee defecation.

The cognitive viewpoint, far from disturbing image traffic with questions about appearance and reality or the construction of the user's "world model", reduces the tension within its discourse by simply identifying knowledge and representation. The language of knowledge is thus not connected to the language of representations to provide a mooring for free-floating images; instead, the former is grafted onto the latter in order to legitimate talk of representation and structure. "Knowledge" is thus a crucial rhetorical figure in the discourse of the cognitive viewpoint.

Examples taken at random show how differences between knowledge and representation are elided:

1.   The user's image is said to include "all of his or her knowledge *and prejudices*" (, p. 189; my emphasis), yet in the following paragraph, the "horizontal and vertical partitions" of the image are described exclusively in terms of knowledge. No mention is made of the discrepancy.

2.   A criticism of traditional information retrieval (IR) is followed immediately by the claim that "cognitive states of knowledge" underlie the "communication system" of retrieval (, p. 191). No justification is given for the restriction of the IR model to knowledge retrieval.

3.   In "The Fundamental Equation of Information Science" [], Brookes presents his claim that "we are professionally concerned with the relation between *information* and *knowledge*" (p. 116) as a *conclusion*, presumably following from his preceding remarks summarizing a "typical information system" in the familiar terms of document collection, subject analysis, organization, and retrieval. Yet the only candidate for the logical support necessary for such a conclusion, a preceding assertion that information science is restricted to documentary scientific and technical information, hardly clinches the argument. In a closely related paper, Brookes [] simply asserts that the relation between *information* and *knowledge* is central to theory in information science (p. 48). The assertion is repeated in a later text [], where knowledge and information are said to have "the same *dimensions*" (p. 97).

4.   As we have seen, the cognitive viewpoint interprets the conceptual system mediating information processing as a *model* of the world, which in turn is interpreted as *knowledge* of the world (, pp. 48, 49). The move from model to knowledge is made silently. They are seen as equivalent: "recognition is guided by what the system (*rightly or wrongly*) considers relevant features and relevant context on the basis of its 'world knowledge'" (, p. 51; my emphasis). No regard is given to the senselessness of attributing "knowledge" to anyone (or anything) that considers *wrongly*.

More examples could easily be adduced, but the general discursive strategy is plain from the few presented here. The term "knowledge" has unrestricted access to the discursive terrain occupied by the term "information", even though the latter is located in a familiar discourse of document organization and retrieval that includes, as Schrader [] has so clearly reminded us in his discussion of domain definition in LIS, "the reality of evil culture, superstitious culture, fraudulent culture, lies, propaganda, slander, misinformation, news, culture that has been revised and replaced, and humour (p. 249)."

The effect of presenting image, representation, world model, information, and knowledge as interchangeable discursive elements is twofold. First, the silent graft of the language of knowledge onto the language of information displaces doubts about the legitimacy of theory by positioning it firmly beyond criticism within the familiar "quest for knowledge". Second, the language of knowledge underwrites talk about structure. Since the opposition of knowledge to ignorance parallels that of organization to chaos, a discursive permissiveness that eliminates barriers between information and knowledge grafts the metaphors of structure, already linked to knowledge, onto information. Such metaphors have a far stronger intuitive appeal for images or representations of knowledge than of ignorance, fiction, or error. The link between knowledge and structure is further strengthened by the discourse of natural science. As Brookes puts it, the world speaks, and science decodes its messages. But the world is not chaotic or contradictory, hence its structure must be mirrored in our knowledge of it, which we store in our images, models, and representations. The cognitive viewpoint need perform little discursive labour to establish its grammatical connections between world, structure, knowledge, and science; its achievement is to insert talk about information, image, and representation into a space where the discourses of world, science, structure, and knowledge are already contiguous.(f)*Expert Intervention*

Nancy Fraser, in her discussion [] of the construction of the social welfare needs of women in the United States, has emphasized that discursive formations establish subject-positions, or identities, for the actors featured in their narratives. The cognitive viewpoint constructs an "expert subject" as the identity

of the information scientist by distributing knowledge and ignorance unequally among the three major actors in its drama of information seeking. The user, by contrast, plays the role of a mere supplicant to a system whose generation, construction, and interrogation is left to others.

Consider first the generators; their models, or images, of the world and of users need not be correct for information transfer to take place. It requires only generator models and intentions to change users' models. According to Brookes's definition of "information", any image, whether a fabrication, illusion, deliberate lie or propaganda, which effects a change in the user's "knowledge structure", is counted as information. But even if the generator's models are accurate and intentions are good, information transfer is defeated if the user's model is not changed. Thus the possession of knowledge by a generator is incidental to the cognitive viewpoint's narrative of information transfer.

Users, on the other hand, are sites of a curious cohabitation of enlightenment and ignorance. They are enlightened about their image-gaps, but only to the extent of being aware of their existence. They are ignorant of the contours, or precise shapes of their gaps, or their location in their world-model, because to have such knowledge would be to have no gap. Their ignorance, therefore, rather than their knowledge, is essential to the cognitive viewpoint's notion of the information system. Indeed, the advance it claims over its predecessors consists precisely in situating the user's "enlightened ignorance" at its theoretical heart.

The information scientists are the most expert, and the most knowledgeable, of the three major actors. Only they enjoy the clarity of complete knowledge. Their expertise is based upon methodologies of image analysis and harmonization. They discern the contours, the configurations, of the gaps in users' knowledge structures, or world-models, discovering exactly what users fail to know about themselves. Knowledge of users' internal realities ** their "internal programs", "sense-making processes", "images", "world models", or "cognitive maps" ** is the whole point of the "paradigm shift from system to user" ushered in by the cognitive viewpoint. Information scientists interrogate a "knowledge store" by combining their newly granted expertise with their traditional mastery of the system of knowledge organisation. By radiating light into the darkness at both poles of the information system, the information scientist simulates both ideal generator and ideal user, by virtue of delivering what would have delivered if the generator had perfect knowledge of the user and the users perfect knowledge of themselves.

An inverse function seems to govern the relation between the expertise and the visibility of information scientists. While information generators and users are most visible, the information

scientists, or intermediaries, are less exposed. Among the many charts and diagrams in the texts cited here, the intermediary between the user and generator is rarely featured (exceptions may be found in , p. 114, and 37, p. 171). But the information scientists can be erased from the charts and diagrams of the information system because they are the omniscient narrators of the story of information transfer. They are nowhere in particular in these narratives because they are everywhere at once.(g)*Instrumental Reason*

When information production and reception are constructed as independently motivated processes within individual "information-processing devices", LIS theory is restricted to a discourse of instrumental reason. Its keywords become efficiency, standardization, predictability, and determination of effects; performativity becomes the true system goal. In limiting the means of knowledge production in LIS to techniques designed to investigate the two poles of the information system, in the interests of efficient information delivery, the cognitive viewpoint submits to a master narrative whose controlling metaphor is the Shannon model of information transfer. Progress beyond this model on the grounds that it ignores the meaning of messages has become a truism of much LIS theorizing (e.g., 38, p. 261), but to introduce meaning as image, representation, picture, or cognitive map, while at the same time accepting a discursive construction of two devices, a generator and a recipient, whose operations are understood as objective, given, natural world processes, fails to escape the dominance of the model's most powerful metaphor. The natural-scientific discourse is simply transferred to the mental realm. By its hospitality to erasures of distinctions between humans and machines through a generalized discourse of "representational devices", or "information-processing devices", the cognitive viewpoint assimilates cognitive processes of generation, transmission, and reception of "images", to natural world processes of generation, transmission, and reception of impulses.   The Shannon model's concern for the "flow" of information is reinvoked in the cognitive viewpoint's discourse of efficiency in image traffic.***Summary and Conclusion: A Discourse of Commodification***

The discursive strategies analysed in this paper show how knowledge and power are related in the theoretical discourse of the cognitive viewpoint. The effects of power may be seen in at least three aspects. By way of summary and conclusion, I will take up each aspect in turn.

First, power operates through a discursive economy, or a strict regulation of specific ways in which information is to be spoken about. Power is exercised by the deployment of a limited number of interrelated discursive procedures: the objectivity of natural science, the universality of theory, a

reification of radically individualized and interiorized "images", "world models", or "representations", the insistence on knowledge, and the constitution of instrumental expertise. These discursive procedures constitute theoretical objects, and enable specific methodologies to study them, thereby enabling the accumulation of sufficient identities, repetitions, replications, comparisons and resemblances for the legitimation of "observable facts". (For a detailed analysis of the ways in which scientific procedures construct facts, see 39.) The point of discourse analysis is not to question the truth of propositions generated, the validity of arguments employed, or the knowledge gained thereby. It is not a coroner's art, practiced upon the corpse of its object. The aim is to show how knowledge is constructed as an effect power operating through specific discursive procedures. Discourse analysis thus offers no *a priori* skepticism about, for example, the possibility of an analysis which yields a "user's world model", or of applying the knowledge gained thereby to develop information systems that deliver texts with greater user satisfaction than hitherto. On the contrary, the aim is to show how discursive formations such as the cognitive viewpoint *constitute* their objects and methods *such that* specific kinds of knowledge are produced. Theoretical objects, such as stable "knowledge structures" or "world models", are justified internally, within and through the mutually reinforcing operations of a theory's discursive resources. They are therefore specific effects of power, rather than given objects, disclosed by transparent, unmediated representations of an objective world.

Second, as Foucault [] suggests in the following questions, power operates not only by enabling specific discourses, but also by disabling others:

> What types of knowledge do you want to disqualify in the very instant of your demand: "Is it a science?" Which speaking, discoursing subjects ** which subjects of experience and knowledge ** do you want to "diminish" when you say: "I who conduct this discourse am conducting a scientific discourse, and I am a scientist"? Which theoretical-political *avant garde* do you want to enthrone in order to isolate it from all the discontinuous forms of knowledge that circulate about it (p. 85)?

Constituting a specific field of knowledge is a political act which simultaneously configures a field of ignorance. The primary achievement of the cognitive viewpoint consists in the installation of discursive procedures which constitute the production, distribution, exchange and consumption of "information" as given, natural-scientific, cognitive events taking place within radically individualized "information processing devices". Information becomes an alteration inside the minds of social atoms, information seeking becomes expertly guided individual image repair, and the information sought becomes an image located within large-scale depositories of representations of an objective world. This

achievement has a profound effect on what may be spoken about and what must remain unspoken, and on what may be transformed into knowledge. In modern public-relations jargon, it puts a specific "spin" upon our talk about information. I have suggested throughout this paper that this discourse displaces talk about the social construction of information processes, whether the constitution of "user needs", "knowledge stores", or the patterns of image production, transmission, distribution, and consumption. The construction of user identities as givens displaces investigations of their instabilities, due to their shifting positions in an agonistic field of competing forces, interests, and important social, political, economic and cultural stakes.

Third, power is exercised through and by means of discourses only when they are taken up by specific actors and institutional sites. And, as Nancy Fraser [] reminds us, there are many of these:

> . . . there are a plurality of forms of association, roles, groups, institutions, and discourses. Thus, the means of interpretation and communication are not all of a piece. They do not constitute a coherent, monolithic web but rather a heterogeneous, polyglot field of diverse possibilities and alternatives (p. 165).

But this does not mean that power is equally distributed:

> Of course, late capitalist societies are not simply pluralist. Rather, they are stratified, differentiated into social groups with unequal status, power, and access to resources, traversed by pervasive axes of inequality along lines of class, gender, race, ethnicity, and age (ibid.).

Fraser's remarks motivate questions about the sites of power which find in the cognitive viewpoint a congenial and obliging discourse of information processes. Which social, economic, political or cultural groups benefit from the discursive procedures analysed in this paper? A full investigation of this topic, beyond the scope of this paper, requires a study of the history and actual circulation of this discourse ** in product development, in government policy, and in the information industry. But the question can be managed here by focussing briefly upon the way in which the cognitive viewpoint constructs the identities of information users.

As consumers in the market economy of advanced capitalism, we are all familiar with talk presenting our consumer behaviour as natural-world processes. The market is said to offer goods freely generated in response to perceptions of the needs of other individuals. Consumer needs are represented as natural expressions of objectively given, individual desires. The imperatives of efficient delivery of available goods, and the complexities of social life requires experts who can identify, interpret, classify, count, chart, graph, programme, and otherwise process the sometime inchoate

expressions of consumer needs. Analyses of the realities of our social, political and economic lives **
massive consumer manipulation, creation of wants masquerading as needs, generation of illusions to
support consumption, invention of countless temporary and shifting consumer identities, and production
based upon profit without regard for real needs ** must always struggle against a universal and totalizing
discourse of expert product delivery to radically individualized consumers acting on their own
unmediated perceptions of gaps in their needs. Constructions of surveyable consumer identities based
upon a reification of needs and wants as naturally given, together with associated techniques of
investigation, generate knowledge of consumer behaviour which articulates specific interests sufficiently
clearly as not to require exploration in this paper.

While the affinities between the discursive strategies of the cognitive viewpoint and the ideology of
consumer capitalism are therefore obvious enough when considering universalism of theory, reification of
needs as radically individual, expert intervention in delivery of goods, and a sharp separation of inner
and outer, the specific emphasis on representation, image, and model (together with its legitimation as
knowledge) speaks the language of a market in a new kind of consumer product which is peculiar to
advanced global capitalism. A characteristic of our age, and one not unrelated to the professionalization
of information science, is the scale of the domestic and global market in images and representations.
Compared to images, the tangible physical object suffers from serious shortcomings as a commodity.
Its materiality imposes a troublesome limitation on repeated consumption, because in general, it endures
for at least a limited time. The problem is recognized in efforts to reduce its endurance; thus children's
toys, automobiles, and a host of other products are designed to self-destruct. The ideal consumer good
has least *endurance*, because it permits the translation of sustained desire into repeated consumption.
Addictive drugs come close to this ideal. But the singular achievement of our consumer society is the
degree to which the materiality of the object is bypassed through the substitution of shifting and
temporary representations and images. Consumption is tremendously amplified when images and
representations become "needs", and when the consumption of the material object comes to represent
the consumption of an image. Representations and images are much more readily fragmented,
decontextualized, remixed, transformed, and repackaged than material objects. Their immateriality also
supports their presentation as intimately connected to individual identities. The significance of the image
in advanced capitalism noted in Guy Debord's *Society of the Spectacle* [40]:

> The entire life of societies in which modern conditions of production reign announces itself as an
> immense accumulation of *spectacles*. Everything that was directly lived has moved away into a
> representation. . . . The spectacle is not a collection of images but a social relation among people

mediated by images. . . . When the real world changes into simple images, simple images become real beings and effective motivations of hypnotic behaviour (§1, §4, §18)

When images and representations are detached from material objects and marketed as commodities, the image economy requires a discourse of image need, production and delivery consistent with a general market economy discourse of freely expressed natural needs and free product production. Referentiality and reification function, as Finlay [] reminds us (p. 35), as conditions of exchange, or trade, among the referents. Thus the reification of the user's "state of knowledge" as an object that can be "harmonized" with a similar kind of object from the "knowledge store" enables a discourse of image delivery and exchange differing in no serious respect from the discourse of a market economy of consumer goods. Modern capitalism's image economy, or "consciousness industry", depends upon constructing constantly shifting fantasies of image needs, and upon associated methodologies of identity analysis in order to create positions for users as image-consuming subjects. Users must be constructed as the kind of subject who requires images and representations, and homeostasis of images becomes the theoretical mission of information science. The cognitive viewpoint thus provides an obliging theoretical discourse for capitalist image markets by constructing information, users, and texts as pure representation. It can combine Marlene Hall's [41] enthusiasm for the new régime in LIS, in which users are understood "in terms of an abstraction" (p. 23), with a dissolution of the "pervasive axes of inequality" (cited by Fraser, above) in a celebration of user individuality. If identity is, as the cognitive viewpoint proclaims, *in essence* mere representation, then a gappy world-model becomes more than the expression of a commodity fetish; it becomes an aberration from integrated subjectivity. Experts do not merely deliver the goods; they make users whole again. The job of convincing consumers of their needs will, as usual, be left to the advertisers, themselves a hardly insignificant branch of the information industry.

The conclusion of the analysis presented here is that the "user-centric" promise of the cognitive viewpoint is compromised by the ways in which its discursive resources are mobilized to integrate users firmly within a market system of information consumption as much outside their control as any other highly monopolized system of consumer product production and exchange. Talk of a new theoretical "shift to users" is difficult to reconcile with discursive procedures that disempower users by (i) limiting their information activities to internal cognitive processes and their information acquisition to image modification, (ii) dispersing the social world into atomic, monadic "inner realities", (iii) limiting their own access to their own inner worlds to perceptions of "gaps" or "anomalies", and (iv) submitting to a

technology of surveillance administered through expert procedures of image harmonization. The theoretical erasure of social practices of individual and collective image generation in the interests of an image market also raises doubts about the "user-centeredness" of a viewpoint which cannot recognize that an image without a gap may mask a dire need. If Baudrillard [42] is right in characterizing our modern world as a "hyperreality of communication and meaning" in which, "by dint of being more real than the real itself", "reality is destroyed", to be replaced by chimera, by simulation (p. 139), then the cognitive viewpoint's theoretical discourse of images pursuing images, representations chasing representations, and world-models requiring repair offers no escape from system domination. Instead, it helps to inscribe existing power inequities into the heart of LIS theory.

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