MEDIA STUDIES AND THE DOUBLE DIALECTIC OF INFORMATION

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Abstract

As noted elsewhere (Babe 2009, 161-73), information is inherently dialectical. Reflection upon the seminal work of physicist Carl Friedrich von Weizsäcker, however, reveals that information is *doubly* dialectical. The first part of this article explains and justifies this claim. The second part of the article catalogues various reductionist (non-dialectical) stances toward information, and draws out some of their implications. Confusions, and indeed grievous errors, result from such incompleteness. Finally, the communication theories of Harold Innis and Marshall McLuhan are reviewed briefly as exemplars in ways of forwarding information's double dialectic.

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Weizsäcker's Double Dialectic of Information

In 1980, nine years after first being published in German, Carl Friedrich von Weizsäcker's *Die Einheit der Natur* appeared in English as *The Unity of Nature.* There the physicist provided keys for better comprehending and integrating such ancient and contemporary dilemmas and polarities as materialism/idealism, objectivity/subjectivity, determinism/freedom, individualism/collectivism, and medium/message. Weizsäcker conceptualised information dialectically. Indeed, I will argue, he proposed (in effect) a double dialectic of information.

Citing Aristotle, Weizsäcker noted that "in the realm of the concrete … no form [or shape, or pattern] exists without matter; nor can there be matter without form" (Weizsäcker 1980, 275). He explained that forms (for instance, cupboards) "in the realm of the concrete" must be made of something – wood, plastic, metal. Likewise, material (such as wood), again "in the realm of the concrete," must have shape or form – whether of a cupboard, a tree, or a pile of sticks. While one may speculate, of course, on angels, telepathy and parapsychology, science and social science investigate "the concrete," meaning that for scientific study there is always *both* matter (or energy) and form.

For Weizsäcker, then, *information* is the *form of matter*, or stated otherwise it is *matter-in-form*. He wrote:

> *"Information" [is] "form," or "pattern," or "structure"…This "form" can refer to the form of all kinds of objects or events perceptible to the senses and capable of being shaped by man: The form of printer's ink or ink on paper, of chalk on the blackboard, of sound waves in air, of current flow in a wire, etc.* (Weizsäcker 1980: 39, emphasis added).

Weizsäcker's phrase, *perceptible to the senses,* announces a further property of "information," namely its relation to sensate creatures, particularly to human beings. He explained:

> *Information is something that can be perceived by man, can be understood, can be thought. But it is not the mental act of thinking; rather, it is what this thinking thinks* (Weizsäcker 1980: 39; emphasis added).

To qualify as information, then, matter/form must be perceptible and indeed must be perceived. (One might say, if not perceived but capable of being perceived – for example, books gathering dust on library shelves – the matter-in-form constitutes *potential information).* According to Weizsäcker, therefore, whereas information indeed exists *objectively* (it is matter-in-form, it is *what* the thinking thinks), that is not the whole story: Information also is *subjective*; it must be perceived.

To be information, however, it is insufficient even that the matter-in-form be perceived; it must also be understood: "Information is only what can be understood" (Weizsäcker 1980, 282). Another way of saying this is that there must be a language or code which the perceiver is capable of applying to the matter-in-form. Language/code is the means whereby the perceived matter/form may acquire meaning. This requirement, too, means that information exists *subjectively* in accordance with the *decoding capabilities* of the perceiving subject.

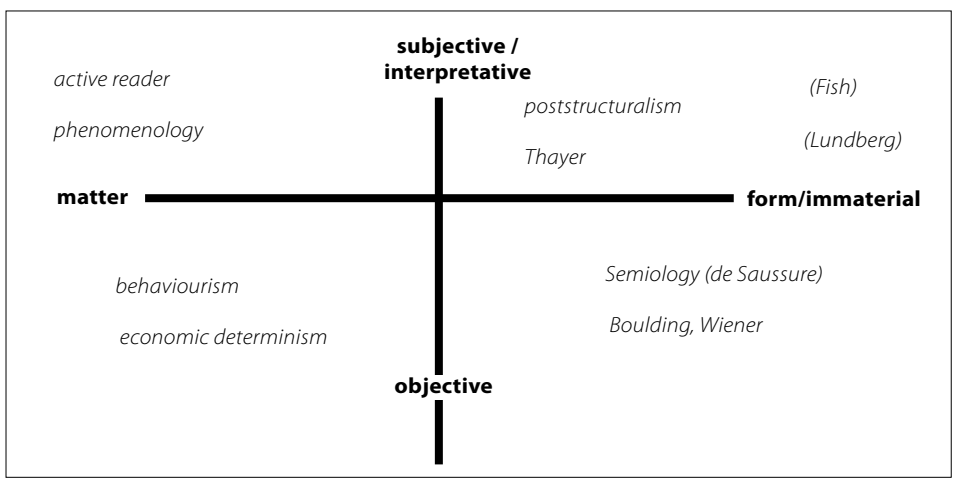
Hence, there are two dualities concerning information. First, information is matter-in-form (or form-in-matter). Second, although information exists objectively as matter-in-form, information is also a subjective entity as it must be perceived and

understood. For someone who is blind or has poor vision, there will be less visual information than for a person with excellent eyesight or for someone using visual aids (eyeglasses, telescopes, microscopes, television). Again, the requirement that information must be understood points to its subjectivity: to apply a code requires prior experience/learning on the part of a perceiver.

There is yet a further highly important aspect to information, and it is contained in Weizsäcker's phrase, "*capable of being shaped by man*." This phrase connotes that people craft information; they construct forms out of matter (or impose patterns on energy, as with a telegraph message). Message producers and senders expend energy; work is done. (Admittedly, shapes not formed by human hands, too, can be "read" or decoded, but the principle remains that energy ("work") moulds these shapes: For instance clouds, mountains, and trees all are products of previous applications of energy).

In the next section I canvass some problematic positions that acknowledge only one side or the other of the dual dialectics of information. These are depicted in the four quadrants of Figure 1.

Figure1: Dual Dialectic of Information



Reducing Information

As illustrated in Figure 1, there are four basic ways of conceiving information *non-dialectically*: as (1) material only, and subjective, (2) immaterial (form only) and subjective, (3) material only and objective, and (4) immaterial (form only) and objective. There are, and have been, many celebrated exponents of each of these "reductionisms," and exemplars are proposed in the four quadrants of Figure 1. These "reductionisms" all have consequences, some of which I now address.

Material, Subjective

This quadrant is the most difficult one to deal with since materialism and objectivity are so often linked. Nonethless, we can glance both at the active reader hypothesis as forwarded by Stanley Fish and at phenomenlogy as set out by G. A. Lundberg as possible exemplars. Both these authors deny the dual dialectics of

information, the first (matter-in-form) through inadvertence, the second (objectivity-subjectivity) explicitly.

In asking, "Is There a Text in this Class," Professor Fish (1980) was not questioning the materiality of textbooks; rather, he was in effect dismissing the significance of forms. As Paul Cobley remarked, "for Fish, the reader supplies everything; this is because there can be nothing that precedes interpretation … There can be no 'given' as such" (Cobley 1996, 405-6). For extreme "active reader" theorists, books are like Rorschach (inkblot) tests: there can be as many meanings as there are readers. If the meaning of any shape or form depends entirely the "reader's" subjectivity, subjectivity is highlighted and objectivity diminished if not indeed negated entirely. True, Fish did not explicitly deny form; but he did, in effect, deny the dialectic of matter/form: despite print on its pages, a book is a *tabula rasa* for Fish inasmuch as it is readers who compose their own particular varied and sundry texts.

A similar case in point is George Lundberg's phenomenology. Writing in 1933, he stated:

> *In any valid epistemological or scientific sense we must say that the substitution of a Copernican for the Ptolemaic theory of the universe represented a major change in the universe. To say that it was not the universe but our conception of it which changed is merely a verbal trick designed to lead the unwary into the philosophical quagmires of Platonic realism, for obviously the only universe with which science can deal is "our conception" of it* (Lundberg 1933,309; quoted in Hammersley 99; emphasis added).

As one critic responded, Lundberg's radical subjectivity if applied in everyday life would "lead to freeway accidents, to lots of other trouble, and finally to the psychiatrist's couch" (Adler 1968, 38; quoted in Hamersley 229, n. 10).

Phenomenolgists' position, generally, is not to deny the material world, but to contend it can be known only indirectly through the mind's processing of sensory impressions. Again, we find a non dialectical position acknowledging matter but claiming total subjectivity. Again, there in no explicit denial of form, but neither is a dialectic of matter-form acknowledged.

A related but more dialectical approach to subjectivity/objectivity was provided by symbolic interactionists George Herbert Mead and Herbert Blumer. They emphasised the commonality of "readings" among language groups. They proposed that shared codes are applied to forms by members of linguistic and other cultural groupings; hence, they proposed a degree of objectivity to forms. However, this is not to say that they acknowledged a dialectic of matter-form.

It is worth noting that Wilbur Schramm, one of the principle architects of American communication study, related that in the early 1950s he purposefully adopted the active reader model in order to counter then prevalent apprehensions on the part of the American public concerning the amount of influence of propaganda/persuasive communication. He stated:

> *[My essay] "How Communication Works" [1950] … was in part a reaction against the mechanistic psychology much in use at the time to explain communication effects, and against the irrational fears of propaganda being expressed in the early 1950's … [I proposed] the concept of a highly active, highly selective audience, manipulating rather than being manipulated by a message* (Schramm 1971, 8).

To summarise, major consequences of accepting the extreme active reader/ phenomenological positions are first denial of the possibility of humans gaining insight into the real, and second dismissal of any and all power or influence on the part of information providers. "Active reader," then, can be a useful position to promote for both those wishing to alleviate public anxiety concerning persuasion or other media effects and for those striving to reduce accountability on the part of message providers.

Immaterial/Subjective

A second reductionist (non-dialectical) formulation of information is post-structuralist/postmodernist, which I have located in the immaterial/ subjective quadrant of Figure 1. With poststructuralism there is an emphasis on language, and in particular on the proposition that language, being self-referential, does not point to or describe accurately conditions in the material world. In brief, according to many poststructuralists, language is severed from material existence and is in effect a system on its own.

Frank Webster, for instance, characterised poststructuralism as rejecting all modes of expression – artistic, scholarly, even architectural – claiming "to represent some 'reality' behind their symbolic form" (Webster 1995, 164-5). Poststructuralist Mark Poster seemingly affirmed Webster's depiction: "Language no longer represents a reality, no longer is a neutral tool to enhance the subject's instrumental rationality: language becomes or better reconfigures reality" (Poster 1994, 176). According to Ben Agger, for poststructuralists language "produces meaning only with reference to other meanings against which it takes on its own significance," adding we are thereby destined "to remain locked up in the prison house of language" (Agger 1991, 28-9).

The dialectic of matter-in-form would be highly problematic for poststructuralism because that dialectic contravenes poststructuralists' radical segregation of discourse from material conditions. Form-in-matter, after all, draws attention to language/discourse inherently being a component of material conditions.

The radical disjuncture between language and material conditions proposed by poststructuralism flies in the face of scientific theory/discovery/experimentation, and technological development. Significantly, the poststructuralist position (like those of the active reader and phenomenology) also denies any possibility of pursuing social justice or seeking environmental health because language or discourse (according to these writers) bears no necessary or likely correspondence to material reality: we simply never know what is real as we are inextricably locked in the prison house of language!

In denying connectivity between language and non language reality, poststucturalism posits extreme subjectivity. There are no objective (material) referents to anchor meaning. Note how Lawrence Grossberg, for one, made this extreme subjectivity explicit by proposing *articulation* as a key poststructuralist category. Grossberg defined articulation as "the production of identity on top of differences, of unities out of fragments, of structures across practices," adding that "articulation links this practice to that effect, this text to that meaning, this meaning to that reality, this experience to those politics; and these links are themselves articulated into larger structures, etc." (Grossberg 1992, 115). These declarations and definitions

imply that there are few if any limitations with regard to what can be joined, few or no irreversibilities, few bonds that cannot be broken, few constraints on creating and disassembling structures. "Articulation" posits enormous freedom to do. There are, in other words, few if any objective constraints.

Material/Objective

The reductionism of this quadrant of Figure 1 denies any possibility of interpretation. Meaning resides objectively in the information/message. Hence, message transmission and reception result in foreordained consequences. It is likely this view of information that Wilbur Schramm had in mind when writing derisively of the "Bullet theory" (Schramm 1971, 8); others have termed it the "hypodermic needle model" (Lubken 2008). This is a materialist theory of information insofar as it proposes strict causality in line with materialist determinism, indicating thereby an absence of interpretive freedom.

When B. F. Skinner wrote *Beyond Freedom and Dignity,* he proposed a strict determinism through operant conditioning, thereby denying the possibility that people can actually make decisions. Behavioural psychology consequently also rejects the notion of human dignity, as Skinner admitted: one can neither take credit or be held accountable for actions in a world where choice/freedom is illusory. The potentially horrendous, totalitarian implications of this perspective are obvious enough.

Skinner denied neither matter nor form; nor did he, however, consider any interplay between them. Skinner, rather, dealt solely with "stimuli," which he maintained could be classified objectively as pleasure or pain, as reward or punishment. Even though it is an experimental subject who experiences these stimuli, they are understood objectively by Skinner.

Immaterial (Form Only) and Objective

In contemporary communication/media studies this position was, arguably, inaugurated by Ferdinand de Saussure. This founder of semiology defined a "sign" as consisting of both a sound presence or a visual form (termed the signifier), and a mental image (the signified). De Saussure, then, dealt with form only, not matter-in-form. For him, signs were "wholly immaterial" (Chandler 2006). Moreover, de Saussure confined his attention to what he termed "internal linguistics, declaring: "My definition of language presupposes the exclusion of everything that is outside its organism or system – in a word, of everything known as 'external linguistics'" (De Saussure 1915, 20).

Cultural theorist Katherine Hayles attributed the tendency of certain contemporary writers to de-materialise information – or as she put it, to view information as "an entity distinct from the substrates [or media] carrying it" (Hayles 1999, 11) – to the influence of Shannon and Weaver's mathematical theory of communication (1948). Three social scientists downplaying the material aspect of information while nonetheless recognising the objectivity of "form" (or perhaps better the dialectic of objectivity-subjectivity in connection with form) were Norbert Wiener, Kenneth Boulding and Gregory Bateson.

Cyberneticist Norbert Wiener viewed the human body as a "text," and rhapsodised how, over time, the body discards and replaces all of its *matter* while retaining the *pattern*: "We are not stuff that abides, but patterns that perpetuate themselves,"

Wiener declared in an oft-quoted passage (Wiener 1967, 130). Wiener, then, did not deny matter; he simply minimised its importance by emphasising its transitory nature compared to enduring form or pattern.

Economist Kenneth Boulding went further, declaring that information is not subject to the two laws of thermodynamics, namely the law of conservation of matter-energy and the law of entropy, both of which universally apply to matter-energy. Hence Boulding implicitly presumed information to comprise form but not matter. Regarding information not being subject to the law of conservation, he wrote:

> *The through-put of information in an organisation involves a "teaching" or structuring process which does not follow any strict law of conservation even though there may be limitations imposed upon it. When a teacher instructs a class, at the end of the hour presumably the students know more and the teacher does not know any less. In this sense the teaching process is utterly unlike the process of exchange which is the basis of the law of conservation. In exchange, what one gives up another acquires; what one gains another loses. In teaching this is not so. What the student gains the teacher does not lose. Indeed, in the teaching process, as every teacher knows, the teacher gains as well as the student. In this phenomenon we find the key to the mystery of life* (Boulding 1956, 35).

In remarking how both he and his students were enriched by his classes, Boulding neglected to recall that students are *material carriers* of forms (their bodies "carry" Boulding's lectures). Energy is expended as these living organisms acquire and process the knowledge (new patterns and forms); and energy is expended also through metabolism as his students simply maintain their existence.

Boulding also maintained, in a similar vein, that the "law of information" counters the law of entropy (the second law of thermodynamics), thereby again segregating matter and form into separate domains.

Finally, let us turn to Gregory Bateson, who defined information as "news of difference" (Bateson 1979, 68, 29):

> *It takes at least two somethings to create a difference. To produce news of difference, i.e., information, there must be two entities (real or imagined) such that the difference between them can be immanent in their mutual relationship … There is a profound and unanswerable question about the nature of those "at least two" things that between them generate the difference which becomes information by making a difference … The stuff of sensation, then, is a pair of values of some variable, presented over a time to a sense organ whose response depends upon the ratio between the members of the pair* (Bateson 1979, 68-9).

Information, for Bateson, being the difference between two stimuli, indicates its immaterial nature: two entities emit stimuli, but no single entity emits a "difference." A difference is akin to a form or pattern. Materialism is at best once-removed in Bateson's configuration.

Boulding and Wiener both emphasised the *objectivity* of information. Boulding instructed his classes and his students learned; Wiener wrote about the pattern (form) of the human body that was perpetuated despite the ephemeral character of the matter comprising it. Bateson, too, may have been speaking of the objectivity

of information in declaring that the "response depends upon the ratio between members of the pair." On the other hand, Boulding and Bateson certainly agreed that information is "subjective" insofar as sensory impressions must be perceived, and Boulding furthermore repeatedly berated to behaviourism for its refusal to consider information processing/interpretation on the part of message receivers.

Today, when one thinks of a "paperless economy" as being environmentally sound, it is important to bear in mind that electronic communication, too, requires a medium or carrier – that like print, electronic communication therefore has effects governed by the two laws of thermodynamics. Indeed, many electronic media are known to be environmental hazards. Due to the materiality of information, moreover, the information economy does not present the prospect of unbounded growth. Only in the problematic realms of angels and parapsychology is there communication through forms-without-matter.

Innis, McLuhan, and the Dual Dialectics of Information

In considering the dual dialectics of information – i.e., the interplays of form and matter, *and* of subjectivity/objectivity – it is useful to turn to Harold Innis and Marshall McLuhan. Although each on his own failed to consider fully the dual dialectics of information, when combined their analyses rectify deficiencies stemming from non dialectical (reductionist) views of information.

Innis famously proposed interactivity between medium and message, which is to say between matter and form. Depending on the physical properties of any given medium (or "substrate") – durability, lightness, ease or difficulty in being encoded, capacity to carry messages, transportability – the medium is predisposed to carry either time-binding or space-binding messages, thereby supporting elites whose power is based on the particular monopoly of knowledge made conducive by the prevailing medium. Messages, though, Innis insisted, act recursively on media, as message senders will tend to choose the medium most attuned to the time/space bias of their messages (Innis 1950, 7).

Innis maintained, too, that the supply of paper "had profound implications for … literature" (Innis 1946, 35). According to Innis, abundance in the supply of paper reduced the costs of producing literature, and publishers consequently sought out new markets. "With the gain in literacy after the Education Act [in England] after 1870 and the commercialisation of literature, the lower classes made enormous demands for the new journalism and the new literature and these demands were met by cheap paper and printing … The popularity of fiction followed the lower prices of novels. Books were sold in enormous quantities and popular writers, particularly women, wrote incredible numbers of novels" (Innis 1946, 51). The medium, in other words, had significant impact upon the message.

Innis provided heuristic and nuanced analyses of the dialectic of medium and message, of matter and form. And he tied that analysis not only to message senders intent on establishing or maintaining monopolies of knowledge, but also to various classes of message recipients in their various tastes for messages, that is in terms of their various subjectivities.

Unlike Innis, McLuhan initially emphasised the medium, and hence downplayed form (as exemplified in his celebrated maxim, "the medium is the message"); consequently, considering that maxim only, McLuhan could be viewed as engag-

ing in a materialist reduction. However, McLuhan proposed connections between the material means of encoding messages and "biases" in interpreting them by receivers or audiences. He maintained that media, as extensions or amplifications of either the eye or ear, affect interpretation/perception in broadly predictable ways (McLuhan 1962). For example, he attributed the predominance of either linear logic or of analogic reasoning to the preponderance in any given culture of media extending (or amplifying the power of) the eye or ear respectively. Linear logic, according to McLuhan, derives from the (illusion of) connectedness in visual space, whereas analogy, due to gaps inherent to audile/tactile space, is more common in cultures emphasising the ear. McLuhan, though, was far from being determinist in this regard, as he insistently forwarded techniques for aiding readers to heighten their critical awareness (figure/ground, pattern recognition, cliché and archetype, laws of the media) (McLuhan, Hutchon, McLuhan, 1971). By focusing on message forms, McLuhan reinstated the fuller "dialectic of information."

Combined, Innis and McLuhan give insights into communicating systems in which sender, receiver, medium, message, objectivity, subjectivity, freedom, causation, are in dynamic interaction. Whereas reductionist or non-dialectical views of information undoubtedly provide important insights, there are costs. It is therefore important to keep in the back of one's mind the full dialectics of information when reading partial accounts.

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