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Information from jussive processes

Abstract
This paper aims to augment a domain-independent conception of information processes developed by Losee (2011) such that it is philosophically pluralistic as well. If successful, I will provide a conception of information that can more easily be utilized across fields without requiring specific ontological or epistemological commitments unique to realism and empiricism. The information concepts of epidata and episemantics are introduced and operationalized in this context to bridge information processing and knowledge. These new concepts are related to Guattari’s hybrid semantics. Finally, I detail the relationship between these concepts and disciplinary and professional values of pluralism as described by prior thinkers. This work is intended to support scholars and professionals who engage with academic disciplines which view themselves as incommensurable with others.

Introduction: Losee’s information from processes

Losee (2012) has argued for a view of information in terms of processes, where a process’s output is informative about its input and/or the process itself. This is a promising, powerful, and succinct framework, but hinges on two key theoretical definitions: those of processes and of aboutness. Losee stresses that his theory is intended to be domain-independent, yet he views both aboutness and processes in ultimately physical terms (Losee 2012, 27). This is operationalized in his conception of hierarchical processes, which always have physical processes as the lowest layer. As an example, Losee’s representation of the Shannon-Weaver model of communication is shown in Figure 1. Losee’s theory sees hard sciences such as physics or chemistry having much more fine-grained colligations, since the processes they study are ‘closer’ to physical bedrock, while the social sciences such as economics or sociology must utilize a relatively ‘tall’ hierarchy of processes, making their disciplinary information more diffuse in physical terms. Thus, in Losee’s framework, the more precise hard sciences would seem to be more amenable to the methods of information science than the social sciences. If true, this would be a dismaying result for practitioners serving patrons in other fields.

Due to the priority given to physical processes, Losee’s information from processes framework as originally stated entails an epistemology of logical empiricism and an ontology scientific realism; it can most fruitfully be applied to domains that endorse these philosophical perspectives. Though indeed domain independent, this framework is ultimately disciplinarily reductive, and needlessly so. In this paper I’ll explore alternate definitions of process and aboutness to determine whether an alternate conception of them more widely compatible with other philosophical presuppositions is possible.
Figure 1: Losee’s representation of the Shannon-Weaver model of communication as hierarchical processes. The bottom of hierarchical processes is always physical.

Adapted from Losee 2012, p. 27.

Jussive processes: encoding and interpretation

Information processes are best described by what Bowker (2005), following Derrida (1998), has termed their jussive qualities: the things they leave out (Couldry and Hepp 2017, 129 et seq.). The jussive mood is a linguistic concept indicating a command, and in this context indicates that the active and contingent process of preservation exerts control over what ends up in the formal archive.

Bowker claims there are two distinct types of jussive processes at work in the formal archive: ingestion and retrieval (Bowker 2010). That is, the formal archive conditions remembrance by virtue of what is included within it and what is subsequently taken from it. In the context of information systems, I’d like to slightly reinterpret these two processes as encoding and interpretation. This allows a new definition of Losee’s information process as a jussive encoding, restrictive in terms of what and how it produces. The result of jussive encodings I label epidata, which isn’t ‘about’ anything; it’s merely, and materially, ‘subsequent-to’ the jussive process which create it. The the interpretation of a jussive process’s output I term episemantics, or the interpretive production of meaning from epidata. Episemantic interpretation is shown to be jussive in Bowker’s second sense, and it is only after such interpretation that aboutness can be said to obtain. This definition related to the Shannon-Weaver model of communication in Figure 2, further discussed below.

My repeated use of the prefix *epi-* in the terms advanced in this paper is deliberate. Defined by the Oxford English Dictionary as “upon, above, in addition”, it possesses the additive, active, constructive quality I wish to invoke. Jussive processes restrict, command, and create. The results of these processes are *derived from* or *in response to* their inputs but do not necessarily share any particular attributes or similarities with them. Further comments on each new term will follow.
Encoding and epidata

Encoding, viewed as a jussive process, restricts the content of a source as it enters a system by restating it within the system’s structure, schema, or terminology. For instance, a typed message on a computer is a jussive encoding of the act of typing on a keyboard into a binary character encoding. The keyboard and other parameters of input constrain the nature of the encoding. The material representation of binary, usually electrical and/or material potentials, are the material manifestation of this constrain. As Losee anticipated, this conception may be fruitfully employed to characterize chains of processes. For instance, the act of typing on a keyboard may be viewed as the jussive output of the process of writing on the writer’s thoughts or intent. Subsequent chains of encoding will materially process this text into electromagnetic charges on a hard drive, signals across the Internet, charges within RAM and cache, and variously illuminated pixels on a display. When a reader encounters the text, all they have access to is what was preserved in this chain of jussive processes. Though the text may result from a writer’s thoughts or intent, manifested in their input activities, the thoughts or intent are left behind when they became encoded. Interpretation, discussed below, is a process of reconstructing or attributing an episemantic dimension to this epidata.

Continuing the example of typing a message, it is clear that Losee’s formulation of information from processes assumes that the process of interpretation is unproblematic. In Losee’s framework, a process’s output (i.e. a typed message) is informative about the process (typing) and its inputs (the typing motion). This interpretation works well when interpretation is unproblematic: useful information about what keys a user pressed can be gleaned from computerized text. But in the case of how such key-pressing related to the writer’s thoughts or intent, the interpretation is wanting for those who would seek to problematize the relationship between text and authorial intent. Keypresses in a word processing program can be said to be transparently jussive; that is, we value them precisely because of their unambiguous connection to their output. Interpretation is not problematic when we focus exclusively on the materiality of input. But the encoding of thought into words is a significantly more complex problem. Ambiguity is pervasive in this relationship, and Losee’s dictum (“a process’s output is informative about the process and its inputs”) seems to break down, precisely at the point where he uses the term “about”. It seems impossible for ‘aboutness’ to apply at the level of encoding or epidata. This is precisely what I’d like to claim: that additional theoretical work must be done to make space for this problematic, which is central for many academic disciplines.

Interpretation and episemantics

I’d like to propose that the solution to this problem is reserving the concept of aboutness as the result of a process of interpretation. Interpretation, you’ll recall, is my term for the second of Bowker’s two jussive processes, where information is taken from
an archive. It is the ascription of meaning to some signal, a process that I’d like to view as constructive rather than deductive. Continuing the example of encoded text, a reader ascribes meaning to the words on the page. In this act, the subsequent-to relationships of encoding are passively taken to be in a relationship with their inputs, as described above, but the additional construction of meaning by the reader represents a process different in kind from encoding. Only at the stage of interpretation can aboutness be coherently examined.

The term I’d like to introduce for this relationship is episemantics. The epi- prefix is intended to serve as a reminder that the semantical relationships here do not inhere in the encoded epidata but are rather placed upon, around, and in addition to such encodings.

Figure 2: An modification of Losee’s interpretation of the Shannon-Weaver model showing epidata, episemantics, aboutness, and subsequent-to relations. Aboutness relations are only possible after episemantic interpretation has occurred.

Adapted from Losee 2012, p. 27.

Episemantics and aboutness

With the distinctions between encoding/interpretation and epidata/episemantics in place, I will argue that Losee’s conception of aboutness’s role arises from a category error: while processes’ output is related to both their input and the processes themselves as he claims, that relationship should not be described as aboutness until episemantic interpretation occurs. Following logical empiricism, Losee assumes that episemantic interpretation is (or: can be; should be; for science, must be) a transparent process, enabling processes’ outputs to be about their inputs. I contend that aboutness only obtains in the relationship between the interpretation process and the jussive encoding process. The relationship between the epidata inputs and outputs of information processing should be described, weakly, as something like ‘subsequent-to’. The aboutness relationship consists of and is created by the episemantics of interpretation.

The major difference between Figures 1 and 2 can be seen as a re-centering of the process of meaning making from the Source to the Destination. In Losee’s model, the
line between Source and Destination indicates that meaning is transmitted from Source to Destination. We can label this conception of meaning making as *given-as* by the Source. In contrast, Figure 2 emphasizes that aboutness is a process of *taking-as* by the Destination. Losee’s conception of meaning transmission is more suited to the *subsequent-to* relationship that holds between epidata and the information processes that generate it. Losee’s conception of communication can thus be seen as the identification of what a message is *given-as* with what it is *taken-as*. My revision of his conception is intended to make space for the problematization of these processes employed by many disciplines.

**Aboutness and signifying and asignifying semiotics**

Episemantics and epidata in this sense can be shown to be similar to Guattari’s distinction between signifying and asignifying semiotics (Genosko 2016, chapter 1). While a full exposition of Guattari’s semiotics is outside the scope of this paper, I hope to show that the moves I am making have precedent. Further, this connection to a philosophy vastly different from and even (in the eyes of some) hostile to scientific realism is further evidence for the pluralism of my abstraction of Losee’s work.

Guattari’s semiotics is based off of an interpretation of the semiotics of Hjemslev (Guattari 1984, 73 et seq.). A crucial distinction for Guattari is Hjemslev’s separation of (roughly, physical) matter and the *formation of semiotic substance*. For Guattari, the relationship between semiotic substances and matter is an *asignifying semiotics* that Hjemslev overlooked. This term indicates the material component or effects of semiosis, a materiality that can have conditioning or constraining effects on subsequent semioologies of signification. The electrical, magnetic, and luminous components of a computer are all examples of asignifying semiotics. An emphasis on materiality has become pervasive in media theory, and much of it has a basis in Guattari’s work, both individually and in collaboration with Gilles Deleuze. The outcome of this focus has been to emphasize the impact of the materialities of media upon what can be and is expressed within them.

*Semiologies of signification* are the more familiar acts of meaning-making, the things that are expressed within systems. But, for Guattari, they are also a tool of State power.

Writing machines are essentially linked to the setting-up of State power machines. The moment they are there, all other poly-centred semiotic substances become dependent upon a single specific stratum of the signifier. The totalitarian nature of that dependence is such that, by a tremendous retroactive effort, it seems to make all semiotics originate from the signifier (Guattari 1984, 75).

For Guattari, semiologies of significations’ power consists in their ability to crowd out all other modes of semiosis. Chief amongst these is the primitive mode of *symbolic semioologies*, which are employed in ritual and childhood play (Guattari 1984, 74).

In Guattari’s terms, everything from the encoding through transmission in Figure 1 is asignifying. This parallels my contention that aboutness does not yet apply. Only
after episemantic interpretation, which parallels Guattari’s semiology of signification, can aboutness obtain. This stands to reason, since without signification and its resultant semantics, there isn’t yet anything for aboutness to apply to. In terms of Guattari’s reading of Hjelmslev, aboutness must wait for the formation of semiotic substance.

Just as we were able to abstract away from Losee’s logical empiricism, we need not follow Guattari in seeing signification as an inherently political process. But, crucially, the framework of encoding and interpretation can accommodate Guattari’s formulation of semiotics. Asignifying semiotics can be seen as an analog of the jussive encoding of epidata. And semiologies of signification can be seen as the analog of the jussive interpretation of episemantics. Whereas, in Losee’s rendering, interpretation is non-problematic and, for science, should be transparent, for Guattari this becomes a locus of political power. The jussivity of epidata is the site whereby asignifying semiotics conditions subsequent signifying interpretation, and the episemantics of interpretation is the site of political control via signification.

Finally, I’d like to argue that the connection of these ideas with a thinker like Guattari, who is extensively discussed in critical and media theory, is evidence for the claim that my modification of Losee’s framework is indeed philosophically pluralistic. Guattari has been sarcastically described by physicists as “the most brilliant mélange of scientific, pseudo-scientific, and philosophical jargon that we have ever encountered; only a genius could have written it” (Sokal and Bricmont 1998, 166). Simultaneous accommodation of scientific realism and Guattari’s semiotics is, I offer, pluralism in the extreme. It also indicates the stakes of my project. If information science is to serve diverse intellectual constituencies, some of which are fundamentally dismissive of others, pluralism is the only strategy that can reconcile these diverse needs without operationalizing a normativity against avowedly incommensurable disciplines.

**An Ontologically pluralistic, domain-independent framework for information**

Together, these modifications seek to transform Losee’s theory from one that entails and requires assent to scientific realism to one that is more philosophically pluralistic, while still preserving domain independence (*i.e.* psychological processes producing psychological information, biological processes producing biological information, and so on). Further, it provides a framework to characterize different domains and systems by describing their jussive processes and the interpretive practices they enable. Losee’s original construction can be seen as a particular instance of my more abstract formulation wherein jussive processes are equated to some colligation of physical phenomena and interpretation is assumed to be unproblematic. The alternate constructions enabled by this abstraction open it to a much broader application by precisely characterizing these elements in distinct ways.

Systems, viewed as the assemblages of various jussive elements, can be described in terms of the epidata they produce, subsequent to various inputs. Users of systems
can then be seen to place episemantic interpretations upon systems’ epidata, producing meaning via these aboutness relationships, which are often heavily influenced by disciplinary and cultural particularities. This conception suggests that a core benefit of contextual techniques like domain analysis can be described as a focus on enabling users’ preferred episemantic interpretations via the specific jussive processes employed in system design. It further suggests that the cognitive authority of information organization professionals (Wilson 1983; Mai 2010) may be directly related to their ability to accomplish this enabling. This restatement of pluralistic values has potential applications in contextual design methodology, the creation and use of controlled vocabularies, interdisciplinary retrieval systems, and interoperability of systems.

**Conclusion: philosophical pluralism in Information Organization**

Why am I interested in doing this work? Amidst long-standing calls for pluralism (Wilson 1983; Mai 2010), and the development of contextual design methodologies such as domain analysis (Hjørland 2002), the field needs frameworks with both domain independence, which Losee provides, and epistemological independence, which I attempt to provide here. Together, these independences will deepen the field’s ability to serve a wide range of domains holding a wide range of philosophical presuppositions.

I don’t seek to claim that Losee himself ignores pluralism as a goal. In fact, Losee makes important overtures to disparate philosophies, such as when he shows how both coherence and correspondence theories of truth can be represented as processes (Losee 2012, 162–165). While these overtures show that Losee’s project is motivated by a species of pluralism, I’ve argued that fundamental modifications are required for true success here.

I’ve shown how Losee and other scientific realists can continue to use and advocate for their preferred view that the jussive elements of processes should be described physically, that episemantics is an automatic, or at least unproblematic, process, and that subsequent-to relationships are sufficient for attributing aboutness. These claims will be unacceptable to many other users and domains, however, necessitating the approach in this paper. Ultimately, my goal is to extol and commend the unifying power of Losee’s approach while advocating for an abstracted conception of it suitable for the inherently pluralistic nature of information science.
References