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# Infobiosemiotics

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This discussion aims at contributing to the definition of a universal concept of information covering objective as well as subjective experiential and intersubjective meaningful cognition and communication argued in more length in Brier (2015a). My take on the problem is that information is not primarily a technological term but a phenomenon that emerges from intersubjective meaningful sign based cognition and communication in living systems. The purpose of this discussion is to discuss a possible philosophical framework for an integral and more adequate concept of information uniting all isolated disciplines (Brier, 2010, 2011, 2013a+b+c).

The attempts to create *objective concepts* of information were good for technology (Brilliouin 1962) and the development of AI, but not able to develop theories that could include the *experiential (****subjective****) aspect* of informing that leads to meaning in the social setting (Brier 2015b). The statistical concept of Shannon (Shannon and Weaver 1963/1948) is the most famous objective concept but it was only a technical invention based on a mathematical concept of entropy, but never intended to encompass meaning. Norbert Wiener (*1963)* combined the mathematics statistical with Boltzmann’s thermodynamically entropy concept and defined information as neg-entropy. Wiener then saw the statistical information’s entropy as a representation for mind and the thermodynamically entropy as representing matter. So he thought he had solved the mind matter problem through his and Schrödinger’s (1944/2012) definition of information as neg-entropy. The idea was developed further into an evolutionary and ecological framework by Gregory Bateson (1972, 1979, 19827) resulting in an ecological cybernetic concept of mind as self-organized differences that made a difference for a cybernetically conceptualized mind (Brier 2008b). But this concepts that could not encompass meaning and experience of embodied living and social systems (Brier 2008a, 2010, 2011).

My main point is that from the present material, energetic or informational ontologies worldview we do not have any idea of how life, feeling, awareness and qualia could emerge from that foundation.

Ever since Russell and Whitehead’s attempt in Principia Mathematica to make a unified mathematical language for all sciences and logical positivism failed (Carnap, 1967 & Cartwright et.al. 1996), the strongest paradigm attempting in a new unification is now the info-computational formalism based on the mathematic calculus developed by Gregory Chaitin (2006 and 2007) ~~)~~. The paradigm is only in its early beginning and is looking for a concept of natural computing (Dodig-Crnkovic, 2012) going beyond the Turing concept of computing. But even that still does not encompass the experiential feeling mind and the meaning orienting aspect of intersubjective communication wither be only sign or also language based.

So far there is no conclusive evidence to make us believe that the core of reality across nature, culture, life and mind is purely absolute mathematical law as Penrose (2004) seems to suggest or purely computational.

Meaning is a way of making ‘sense’ of things for the individual in the world perceived. It is a non-mathematical existential feeling aspect of life related to reflection past, present and future of existence in the surrounding environment, in humans enhanced by language, writings, pictures, music through culture. In animals cognition and communication are connected to survival, procreation and pleasure. In humans beings cognition develops into consciousness through subjective experiential and meaning based (self-) reflection of the individual’s role in the external world and becomes an existential aspect.

My conclusion is therefore that a broader foundation is needed in order to understand the basis for information and communication in living systems. Therefore we need to include a phenomenological and hermeneutical ground in order to integrate a theory of interpretative/*subjective* and intersubjective meaning and signification with a theory of *objective* information, which has a physical grounding (see for instance Plamen, Rosen & Gare 2015). Thus the question is how can we establish an alternative transdisciplinary model of the sciences and the humanities to the logical positivist reductionism on one hand and to postmodernist relativist constructivism on the other in the form of a transdisciplinary concept of Wissenschaft (i.e. “knowledge creation”, implying both subjectivism and objectivism)? The body and its meaning-making processes is a complex multidimensional object of research that necessitates trans-disciplinary theoretical approaches including biological sciences, primarily biosemiotics and bio-cybernetics, cognition and communication sciences, phenomenology, hermeneutics, philosophy of science and philosophical theology (Harney 2015, Davies & Gregersen 2009).

Peirce develops his pragmaticism as a way to unite empirical research, meaning and experience. His ontology is not only materialistic science but does also include meaning through embodied interaction through *experiential living* bodies and thereby the social as well as the subjective forms of cognition, meaning and interpretation. Thereby he goes further than Popper’s (1978) view of the three worlds. Communication is not only a world of objective knowledge but is intersubjective meaningful information. Peirce’s idea of ‘the world’ is much bigger than what science considers being ‘the world’.

My claim is that an evolutionary theory of the emergence of experiential consciousness will - so far - only work from Peirce’s foundation (Brier 2015c), because it is a realist process philosophy integrating phenomenology (Harney 2015). Charles Sanders Peirce’s pragmaticist semiotics integrates logic and information in interpretative phenomenologically based semiotics (Ransdell, 1989). I therefore suggest building information theories based on semiotics from the basic relations of embodied living systems meaningful cognition and communication and so does Luciano Floridi (2011).

Embodied life is meaning processes. Life as meaning is a, semiotic and cognitive concept that can be applied to life as process in different historical, cultural, aesthetic, technological, ecological, and other contexts. The making of meaning is believed to take place in a non-dual process in which semiosis is distributed throughout the cybernetic system. It is believed that bodies as living entities are creating meaning in their interaction with the environment unfolding in space and time, and in relation to other bodies. Life as meaning includes (self) conscious, preconscious and non-conscious bodily processes (Kauffman & Gare 2015). In my view the Peircean semiotic solution to an interdisciplinary framework for cognition and communication does not work without his whole pragmaticist philosophy with its foundation in his hylozoist (matter is alive), thycistic (probabilistic stochastic), synechistic (field view) and agapistic (evolution is unfolding feeling) ontology, combined with his phaneroscopic triadic epistemology of phenomenology, of which aesthetics, ethics and the view that logic is semiotic - meaning that what we know as logic is only the formal part of it - is the rational basis (Brier 2010, 2011, 2013 a + b +c, Peirce, C. S. 1931-58, Houser & Kloesel 1992, Peirce Edition Project 1998).

Although Peirce’s information theory is built on meaningful signs and he connects information to the growth of symbols, his information theory is empirically based in a realistic worldview, which in the development to modern biosemiotics includes all living systems (Brier 2015). Still I think he needs to import the theory of self-organization from general system theory and Maturana and Varela’s (1980 & 1992) theory of autopoiesis from second order cybernetics. Luhmann (1995) integrates this with general system theory and a theory of the social as communication defining three levels of autopoietic organization: a biological, a psychological and a social one. Thus what I call Cybersemiotics (Brier 2008-13) is an attempt to create a transdisciplinary view of a science (understood as Wissenschaft) that integrate the natural, life, social and human “sciences” in uniting the qualitative and the qualitative methods and their respective ontologies expanding the so called “scientific worldview” It is a form of realistic truth oriented transdisciplinarity integrating information with experience and meaning.

Peirce’s semiotic pragmaticism combines with Luhmann’s system theory in a cybersemiotics extends our view of reality and meaning to be able to encompass all wissenschaft.

## Supportive materials

**The ORC OR theory** of Hameroff and Penrose (2016) considers the ontology of the quantum field as something beyond the classical sciences ontology. The authors believe that we need a revolution in quantum physics that will blast its way to a new philosophical framework for the natural sciences in order to create a theory that can fully understand consciousness. They are thereby arguing that even Chaitin (2006 + 2007) and Wheeler (1994) are considered as having only touched the surface of the quantum field reality with our present informational understanding. Hameroff-Penrose (2016) expects that new deep aspects will appear in further investigations of the quantum field dynamics in brains. Consciousness will be shown to arise from the quantum realm. Their hope is that qualia and awareness will reveal itself in its very basic forms and therefore qualitative change the ontology of science as it usually does not include experience, awareness, feeling and qualia. That will provoke a revolution in physics to fully understand consciousness.

## Info-Computationalism wants to go from a foundation in the machine into the world of nature, culture and integrating them all with an info-computation concept stronger than the statistical information concept, on which cognitive science was started (Lindsay and Norman1977). This paradigm is in its early development stage (Rozenberg, et al 2012).

**John Searle’s Chinese room argument** about the non-computability of meaning (2002) has been defended for 35 year to make it clear that understanding is not a Turing computation and therefore not a part of AI however much it develops. Human understanding is a non-computational process. Part of the reason for that is that we so far believe that qualia and phenomenal experience are also not Turing computable in that they are not digital but experiential aspect of reality. There are different project attempting to go beyond Turing computability that into some kind of “natural computing” in an info-computational paradigm (Dodig-Crnkovic & Burgin 2010 and Dodig-Crnkovic, G. (2010) and a new form of :

**Integral Biomathics** (Simeonov& Cottam 2015) springing from the INBIOSA project (Simeneov et. Al. (2012). So far info-computationalism does not include phenomenology in its paradigm and the Integral Biomathics leans mostly towards functionalism.

## Stuart Kaufmann attempt to make signs emerge from a physicalist interactivist worldview (Kauffman 2012). It is further developed towards more phenomenological integration in Kauffman & Gare (2015). This integration would also be necessary if we start in cybernetics and system theory that also has transdisciplinary aspirations as for instance Luhmann’s triple autopoietic communication based system theory (Luhmann 1995).

## Niklas Luhmann has – in spite of Maturana’s protests - positively developed general system theory by integrating second order cybernetics and autopoiesis theory in his triple autopoietic view of communication to be more transdisciplinary than any other system science. I think that Luhmann lack a semiotics and a theory of qualia or Peircean Firstness. But he shares the view with Peirce that information is not a thing in itself. It only works as a part of a meaningful message. Here Peirce coincides with Luhmann’s autopoietic system theory (Luhmann 1995) that sees the social as communication and these communications as symbolic generalized systems of autopoietic nature each with its own code.

**C. S Peirce semiotic** transdisciplinary theory of cognition, signification and communication includes a fallibilist empirical realist theory of science that integrates an original interpretation of phenomenology and hermeneutics in his transdisciplinary semiotics. Peirce’s philosophy is highly original combination of a new triadic category framework revising Aristotle’s, Hegel’s and Kant’s combined with an process ontology of synechism, tychism and agapism compatible with modern irreversibility thinking in non-equilibrium thermodynamics. On top of that he adds a fallibilist, empirical and social theory of science (Brier, 2015c). Here he has much in common with Habermas (1987) who in his discourse ethics combine logic, aesthetics and ethics.

**Biosemiotics**: And it is her that you hope the connection with the new developments of Peircean semiotics into a transdisciplinary biosemiotics (Hoffmeyer 1996 & 2008a, Favareau 2009. Kull et all 2009) may make it possible to create a new transdisciplinary synergy? I agree with Peircean biosemiotics that all information must be part of real relational sign-processes manifesting as tokens.Peirce does not make the scientific model of the world to be all of reality in that the real also includes Firstness and Thirdness exemplified by the combination of true probabilities in the form of would-bes and habits or regularities. This he produces a realist process ontology integrated by the dynamic triadic sign (Deely 1990 & 2001).

**Wissenschaft**: I prefer the German conception to the English ‘science’, as the English has a tendency to be interpreted only as natural sciences and the qualitative part of the social sciences, where the German concept include all of social science and the humanities). Starting with the situated living body as agent in meaning-making processes cultural history is to be considered as integrated into the evolutionary process propelled by man’s biological existence, with its range of perceptions, experiences, desires and imaginations.

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