



# Biosemiotics in the community

Essays in honour of Donald Favareau

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**Edited by** Kalevi Kull and Paul Cobley

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## ***Signatum***

The development of academic knowledge depends deeply on the help scholars provide to each other, to their colleagues and students, and on the co-work in their search for understanding – of the world, of the subject of the inquiry, of ideas, and of themselves as human beings. Donald Favareau grew up in New York, studied in Los Angeles and is currently working in Singapore. In the University of California, Los Angeles, he studied philosophy and linguistics. Via his advisors he received the kind of solid interdisciplinary knowledge that is so important for a biosemiotician – from an applied linguist John Schumann, from a neuroscientist Marco Iacoboni, and from a linguistic anthropologist, semiotician and a specialist on aphasia, Charles Goodwin. In the National University of Singapore, Don (as we all know him) does research, and teaches students both biosemiotics and how to do research.<sup>1</sup> And in meantime, he likes to go scuba diving in the waters of Indonesia, so diverse in marine life.

It was not the beginning of biosemiotics when Don first appeared in biosemiotics community in 2001, after a correspondence with Jesper Hoffmeyer. How long the semiotics of life has developed was to be described thoroughly by Don some years later. Yet, he came to stay, and he became a scaffolding for the whole field. Don is the one who attempts to understand everybody's approaches and suggests how to link these together. He is a master of intellectual empathy. Since the first Gatherings in Biosemiotics, it has been he who has attended them all. The way that he cares for everybody in the

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<sup>1</sup> See 'Meet Donald Favareau', at <http://www.usp.nus.edu.sg/about/meet-our-professors/28-donald-favareau>.

community can be seen, for instance, from his account to the first dozen years.<sup>2</sup>

Don has been the vice-president of the International Society for Biosemiotic Studies from its beginning in 2005 to 2012, and then again from 2015 onwards. Many of the contributions that follow pay tribute to his work during this period and before: sometimes through a focus on specific intellectual topics of mutual interest; sometimes through reference to Don's organizational acumen; sometimes with reference to both. What is gathered below is only a fraction of our thankfulness and admiration – from colleagues, students, friends.

*Kalevi Kull  
Paul Cogley*

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<sup>2</sup> See Favareau, Donald 2012. Twelve years with the Gatherings in Biosemiotics. In: Rattasepp, Silver; Bennett, Tyler (eds.), *Gatherings in Biosemiotics*. (Tartu Semiotics Library 11.) Tartu: University of Tartu Press, 64–72.

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# ***Salutatio***

## ***Charles Goodwin***

University of California, Los Angeles, USA

Don Favareau is one of the most extraordinary people I have had the privilege and pleasure of knowing.

My first encounter with Don was when he came to get a PhD at the Department of Applied Linguistics at UCLA. With John Schumann, I was honored to be one of his co-advisors.

Long before he received his PhD he was not only my colleague, but also my mentor. I learned an incredible amount from him. He was one of a few crucial people in my life that led me to move my research and thinking in important new directions, and to see the world, and the animals and people who inhabit it, in radically new ways that inform the research I do every day. Today I presented new research to my seminar. Sitting at the heart of the presentation was a quote from Don. Don didn't force me to think in new ways, but led me there with the excitement and richness of his ideas. I had to minor in Philosophy for my undergraduate degree. Don's incredible articles on the history of the sign cast what I had been taught in an entirely new light, and interrogated the philosophical tradition in ways that reshaped my thinking about language and the body in human interaction, and nurtured a long standing, continuing engagement with the semiotic practices of all forms of life. His *Essential Readings on Biosemiotics*<sup>3</sup> has a permanent home right next to my desk. As a senior professor, one of my great learning experiences was attending

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<sup>3</sup> Favareau, Donald (ed.) 2010. *Essential Readings in Biosemiotics: Anthology and Commentary*. (Biosemiotics 3.) Dordrecht: Springer.

for a quarter an undergraduate class that Don, still a graduate student, taught on biosemiotics. Incredible ideas (and videos!). We were honored when Don gave a plenary at our retirement celebration this year.

I was very sad when Don got his degree and left Los Angeles. I love talking with him, and growing from his ideas. I miss him and look forward eagerly to every chance we get to meet.

Don is also an incredible human being: ethical, warm, and possessed of amazing generosity. He and Emi are among the people I most want to spend time with, not only for intellectual stimulation, but also for the warmth of their companionship, the pleasure of just being with them.

One of the things I most treasure in my life is having known Don, and grown through his combination of kindness and intellectual richness. He is both an extraordinary thinker, and an incredible human being.

## **The intuition of the relevant next**

***Franco Giorgi***

University of Pisa, Italy

Don Favareau has provided the biosemiotics community with some of the most exemplary contributions furthering our knowledge of how living systems and their sign systems are closely related in evolutionary development and in information transfer across generations. On several occasions, he has argued that, while science examines only material interactions, symbol studies are primarily concerned with the logic of the virtual and immaterial relations of “thought”. This view makes it explicit that the world we all live in can be carved up into two sensible, but mutually incomprehensible, domains of investigation: one of material entities; and one of immaterial relations (Favareau 2013). In Don’s view, this discrepancy can only be solved by rediscovering the role that sign-interpretations play in the relationships that living creatures, as driven by their internal causal interactions, entertain with the unpredictable demands of the external environment (Favareau 2013). This entails understanding that no intracellular event, such as calcium waves or activation of specific signaling pathways, can ever be meaningful *per se*, i.e., by virtue of their sole intrinsic properties. Rather, every one of these events should, in principle, be considered as genuinely meaningful by the simple fact of being already part of a larger system of communicative interactions and reciprocally related with any other part of the same system (Favareau 2007).

Thus, in any semiotic understanding of nature, it is the role played by sign-interpretation that should be sufficiently well accounted for, if we are to explain how relationships are first explored

for their capacity to persist, and how they are eventually fixed for their capacity to yield higher efficiency and resolution through specific mechanisms. And, in turn, the acquisition of this knowledge should suffice to understand and eventually explain how biological complexity and cognition are evolutionarily developed through the establishment of a vertically-oriented semiotic scaffolding. However, in Don's view, this amounts to saying that only diachronic relationships could contribute to the emergence of a semiotic scaffolding, as if only in this dimension could they be organized hierarchically.

To account for the emergence of multiple and more complex semiotically scaffolded relations, Don suggests to consider not only the diachronic dimension, but also the scaffolding's synchronic power that makes horizontal relationships accessible as signs expressing real novelties and creativity (Favareau 2015a). Under these conditions, signs are not only acting as determinants of newly emerging semantic topologies, but also as flexible linkers, capable of modifying each other's referential functions under different types of combinations. This entails that almost every biological process may ultimately be triadic in its very nature, in the sense of being always embedded in context-dependent and context-creating relations. According to Favareau, such relations do not act as information carriers by themselves, but are instead "representative" of other biological states and processes interpreting their contextual variations as meaningful perceptions of inside/outside differences. In a biosemiotic perspective, it is precisely the establishment of this type of sign relations that bridges the subject-dependent experience with the subject-independent reality of alterity (Favareau 2010).

Surprisingly enough, there is a wide range of biological functions that can be accounted for within this semiotic framework, including action choice, recognition and communication. The fundamental question that this categorization may then stimulate is related to the type of semiotic feature that can actually describe their commonality.

Along with Terrence Deacon, Don recognizes in 'absence' the distinctive feature that makes it possible for living organisms to categorize their experience and, on that ground, to adapt their behavior to unpredictable future outcomes (Kull, Emmeche, Favareau 2008). However, there are different ways of referring to the future. Science deals with prediction by inferring experimentally verifiable events, whereas anticipation is a real semiotic activity interpreting future-oriented actions as sign-relations between something occurring now and something expected to occur later (Hoffmeyer

2008). However, foreseeing the future in predictive terms entails expecting something that, in the observer's mind, may have already been determined. By contrast, anticipating the future as a sign entails exploring the alternative possibility of being open to an undetermined future and entering the world of relationships and meaning-making. In practice, this amounts to foreseeing the future as an unconditioned adjacent possible – as predicted by the Kauffman's self-organization model (Kauffman 1993) – and experiencing the full range of all opportunities that may spontaneously emerge from the unexpected.

Don's seminal contribution to our understanding of anticipatory relationships is marked by the transition from the physically pre-definable world of the adjacent possible, as a simple and objective eventuality, to the actual goal-directness of the subject's project, as it is expressed by the 'relevant next' (Favareau 2015b). As Don defines it, the relevant next does not bring into being a pre-given, singly end-directed ordered world, but an emergent, many-ends-directed world of promiscuous, unforeseeable and interacting *telos*. As such, this definition provides a beautiful example of how the transition from a scientifically predictable world to a semiotically unexpected world opens the horizon of creativity and combines the novelty of the unprecedented with the usefulness of the nature's availability.

*Auguri* Don for your predictable, but hopefully, unexpected, 60th birthday.

## References

- Favareau, Donald 2007. How to make Peirce's ideas clear. In: Witzany, Günther (ed.), *Biosemiotics in Transdisciplinary Contexts: Proceedings of the Gathering in Biosemiotics 6, Salzburg 2006*. Salzburg: Umweb, 163–173.
- Favareau, Donald (ed.) 2010. *Essential Readings in Biosemiotics: Anthology and Commentary*. (Biosemiotics 3.) Dordrecht: Springer.
- Favareau, Donald 2013. Introductory remarks. In: *13th Biosemiotics Gathering (Abstracts)*. Castiglioncello, 44–48.
- Favareau, Donald 2015a. Symbols are grounded not in things, but in scaffolded relations and their semiotic constraints (Or how the referential generality of symbol scaffolding grows minds). *Biosemiotics* 8(2): 235–255.
- Favareau, Donald 2015b. Creation of the relevant next: How living systems capture the power of the adjacent possible through sign use. *Progress in Biophysics and Molecular Biology* 119(3): 588–601.
- Hoffmeyer, Jesper 2008. Semiotic scaffolding of living systems. In: Barbieri, Marcello (ed.), *Introduction to Biosemiotics*. Berlin: Springer Science, 149–166.

- Kauffman, Stuart A. 1993. *The Origins of Order: Self-Organization and Selection in Evolution*. New York: Oxford University Press.
- Kull, Kalevi; Emmeche, Claus; Favareau, Donald 2008. Biosemiotic questions. *Biosemiotics* 1(1): 41-55.

## **What is the possibility?**

***Kalevi Kull***

University of Tartu, Estonia

In the evening of the final day of G17 – the 17th Gatherings in Biosemiotics – we sat around a round table for a small meal. In Lausanne, Café de Grancy, June 10, 2017. The program for that last day, Saturday, had included a trip to Zürich Zoo, to investigate a piece of Heini Hediger’s heritage.

Thus, back in Lausanne, there was seven of us around the table. Henrik Nielsen, Filip Jaroš, Timo Maran, Naoki Nomura, Lauri Linask, me, and Don. Katia Velmezova, who had to be in Geneva that day for the meeting of the *Cercle Ferdinand de Saussure*, arrived a bit later.

I asked Don: “In the contemporary situation of biosemiotics – what is its most important problem to focus on? What is the main challenge for current biosemiotics?” Don responded, and one by one everybody of us expressed their view. Henrik said that while not claiming about the entire field, but for himself, it is finding the connections between biosemiotics and bioinformatics. Filip emphasised that it is the need for more empirical studies in biosemiotics. But now – Don.

“What is the possibility?”, he answered quickly.

The day before, on Friday evening, we had our conference dinner on a boat. During three hours, we enjoyed the birds and views from Geneva lake, to vineyards, to mountains, to buildings and lights at both the Swiss and French side of the lake. Floating on the lake, Luis Bruni and Don had a longer discussion about the problem how to get from the deterministic world to the world of possibilities, that means

of life and semiosis. I stepped in for some part of that discussion that got continued the next day.

“What is the possibility?” said Don to be the problem, a fundamental problem of biosemiotics these days. “Do you mean in the plural?” I asked. There cannot be just one possibility; it would not be a possibility in this case.

“Yes. What are the possibilities? And how do they exist for different organisms? ... And then, second – what are the possibilities for biosemiotics?”

“For instance – how many possibilities has the tick? We need to study such things – as empirical questions. It is important to re-establish the umwelt-research laboratory – as Uexküll had it.”

Possibilities, in this sense, do not exist for those who do not live, or who do not interpret. How far does our understanding go now? Where do possibilities come from?

We seemingly cannot prove yet what is sufficient for the existence of possibilities; however, we can formulate several points (conditions) that are necessary for having possibilities, or, synonymically, for the existence of choice, or, for the existence of semiosis. Let us try to sketch those here, just briefly.

## **1. Simultaneity**

The possibility can be defined as an option for a behaviour, for an action. An option is a behaviour that can be chosen. There cannot be just one single option in time, because in this case there will be no choice. Therefore, there should be at least two options provided simultaneously. What that means is options are always plural, otherwise they are not options. For the same reason, the options cannot be just sequential – then they would be single, at each moment.

## **2. The present, or finite now**

The existence of options requires that they have to be recognised. Recognition by somebody of *something more than one* cannot happen in zero time. Therefore, there should be a finite period for recognition of some options. This has been called the ‘moment’. The specialists who study this write, “it was Karl Ernst von Baer (1864) who came up with the concept of ‘moment’, which is supposed to be the longest time interval to be objectively measured without apparent duration.



Von Baer suggested that different organisms presumably have different moments if measured by external means” (Pöppel, Bao 2014: 244). The moment is the state of simultaneity of options, or possibilities.

We notice that the moment in this sense can be identified with firstness as defined by Charles S. Peirce. “Firstness is the mode of being which consists in its subject’s being positively such as it is regardless of aught else. That can only be a possibility” (CP 1.25). Firstness is the field of possibilities – necessary for semiosis.<sup>4</sup>

The moment is the duration when the sequence of options is not determined. The moment (the Now) provides the condition for introducing the order, for introducing a structure into the field of options. At the Now, the order, or sequence, is free.

We know from our experience that the subjective present exists. Moreover, there are many studies about it (for instance, Pöppel 1997), while the phenomenon has several names: specious present, subjective present, internal now, or just Now. Stamps (1980: 64) notices: “The emergence of life out of the eotemporal world of pure succession is characterized by a new level of temporality and the emergent temporal feature of a “present”. Stamps refers to Fraser (1978) who has a similar understanding.<sup>5</sup>

### 3. Incompatibility and functional cycles

Possibilities are never single, never alone. That means, possibilities are mutually defined. Or to put it otherwise, possibilities are possibilities if they are alternatives. And alternatives are alternatives if they cannot be simultaneously implemented – which means that they should be incompatible.<sup>6</sup>

Using an opportunity – i.e. implementing a possibility – is based on the work of a functional cycle, inasmuch as any behavioural act is based on a functional cycle. This has a number of important implications: logical, energetic, and anticipational.

The functional cycle can be described by means of logic as an algorithm of the structure IF(there is  $x$ ) THEN(do  $y$ ). Possibility might then be identified as the recognized  $x$ . Accordingly,  $y$  is the behaviour that will ‘be done’ as a result of a recognized  $x$ . But such a description

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<sup>4</sup> There is a nice article about firstness by Dinda Goriée (2009).

<sup>5</sup> See also Fernández (2010).

<sup>6</sup> More about ‘incompatibility’ in Kull (2012; 2015). Also in Weber (2016: ch. 6).

hides a problem. IF(there is  $x$ ) seems to be a hint to an existence of a choice; however, in the case of machine implementations it is certainly deterministic. Indeed, there is no place for freedom if the behaviour consists just of an algorithm followed by an algorithm followed by an algorithm... Freedom of behaviour would require a situation in which there is more than one algorithm simultaneously applicable, while for selection between these algorithms no separate algorithms are simultaneously *available* i.e., not available at that *moment*.

Functional cycles themselves do not consist entirely of processes that would proceed without additional work. This means, each functional cycle includes some linkages that are designed (by life processes), i.e. that have been acquired (produced by learning) earlier. This implies that the structure of a functional cycle itself already includes an element of knowledge<sup>7</sup>. Thus the functional cycle itself has an aspect of anticipation<sup>8</sup>.

That each functional cycle does work (in the physical sense), i.e. requires a supply of energy, follows from the fact that the functional cycle includes a code-relation (in Barbieri's sense). Copy-making and code-making<sup>9</sup> (both necessary for a code-relation) cannot be based solely on self-assembly<sup>10</sup>, which means they do not persist without an energy supply, i.e. without physical work. This means that functional cycles themselves are drives, and their "clash" in the situation of absence of an available algorithm is what makes the choice inevitable; this choice at the point of absence is the source of intentionality, and agency itself. This is also what we call 'semiosis'.

However, it is crucially important to point out and remember that choice – meaning the incompatibility of algorithms (or codes) – assumes simultaneity. Semiosis takes place only in the Now. Don has a close intuition when he writes, "all life forms encounter chance, alterity and otherness on a moment-to-moment basis, and live their lives answering, through their actions and abductions, the eternal experiential question that the very act of living ceaselessly imposes on them: 'what do I do now?' Only out of such ever-renewing indeterminacy and possibility, as Peirce notes, can creative

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<sup>7</sup> On the concept of knowledge in this extended sense (while still limited to living, or, more exactly, to semiosis as the producer of knowing) see Favareau (2007a) and Kull (2009).

<sup>8</sup> On anticipation, see Nadin (2016).

<sup>9</sup> See Barbieri (2003).

<sup>10</sup> See Deacon (2012).

engagement with pure Otherness [...] arise, and the habit-taking of actualized relationships begin” (Favareau 2013: 149).

#### **4. Semiotic learning**

It is obvious that learning and memory are aspects of semiosis, or at least directly related to it. So far, however, semiotic theory and theories of learning and memory are not well combined. Most theories of learning and memory do not go deep into the aspects of meaning-making, and conversely, most semiotic theories do not take into account contemporary results in the studies of learning and memory. Therefore, in the next steps we are going to make here, we do not have much upon which we can rely. Semiotic learning *is* the shifting of scaffolds as a result of the choices (between possibilities) made, in the framework of functional cycles that are involved. And these are the scaffolds that have a decisive role in delimiting the behaviour of functional cycle.

Thus *knowledge* appears to be the cumulative structure that is made of traces of removal of incompatibilities (of inconsistencies) as a result of choices made. Since semiotic memory can be defined in the same way, then, in this approximation, knowledge and memory are not distinguished.

#### **5. Formal learning**

However, there exist other processes that are also widely called ‘learning’ while these do not include any choice between the simultaneously provided possibilities. Let us call this ‘formal learning’. Since it does not include choice, it cannot make meaning. It may nevertheless externally look the same, while remaining a zombie learning. I think this is what almost all machine learning which is based on algorithms is about, either deterministic or stochastic.

Thus, again: semiotic learning includes interpretation that includes choice; formal learning does not. Accordingly, semiotic learning assumes the subjective present; formal learning does not.

## 6. Confusion

Situation of choice assumes indeterminacy of behaviour; i.e., in the Now, it is not yet clear, for a tiny moment, which decision will be taken. This is because of possibilities. The existence of possibilities necessarily implies the moment of indecision – of confusion – the moment the choice is going to happen. Freedom, the Now, means confusion. Happily, it does not last long – there is not yet time (in the sense of sequence) in the Now.

## 7. Origin of orienting

If there was not memory, there would not be any guide for choosing between possibilities. Absence of memory does not restrict choices, however. Whichever of the possibilities will be chosen, it will move something in the body. This is the start of building the guide, called memory.

Semiotic memory works as a guide via recreation of sign in the present. The depth of guidance will depend on the type of the sign created (or rather – emerging).

## 8. Semiosis, or interpretation

Life is problem solving. We mean by this that the situation of choice, of incompatibility, of confusion, could be described as the situation of a problem. However, 'problem' is here meant in a very generalized sense – because this situation we have in mind is the situation in which any choice made (regardless/irrespective of *what* has been decided or chosen) is already the solution and removes the indeterminacy.

Indeed, life is not so very complex from the outset. Mind does not start in one step. Peirce (CP 6.222) writes about “the distinction between two kinds of consciousness, the *quale*-consciousness and that kind of consciousness which is intensified by attention, which objectively considered, I call *vividness*, and as a faculty we may call *liveliness*.”

## 9. Types of interpretation, types of signs

There is a sign only due to interpretation, i.e. due to semiosis. The sign's type, accordingly, depends on semiosis.

For instance, look at the blue pattern in the Fig. 1 that is similar to 'Don', for a human eye. (Saying this I mean that due to the difference in the colour and shape of letters, these may not be similar for an eye of some other species. Taking such a broader point of view, let us try to imagine the possible ways of interpretation.)

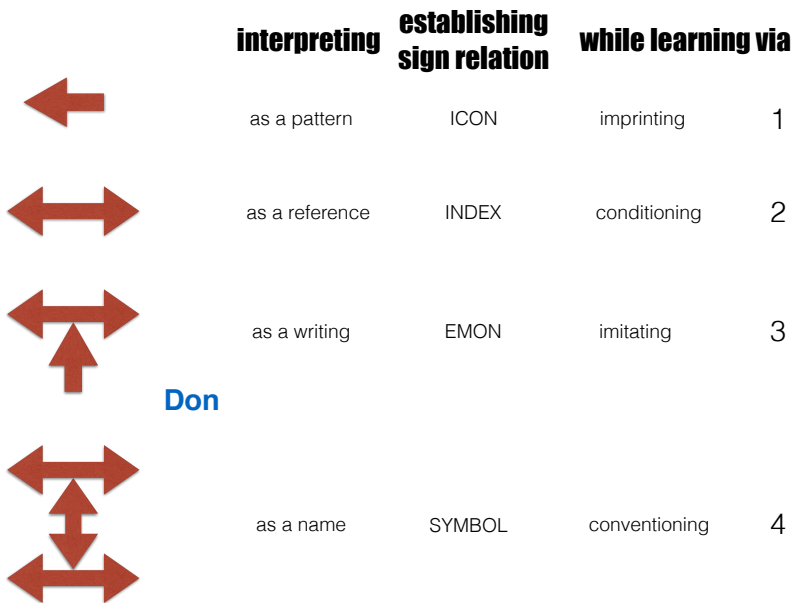


Figure 1. Four ways of perceiving and establishing the sign relation, which correspond to the learning via different means.

(0) From a physical point of view, i.e. without the involvement of perception, 'the blue letters' is even not an object, I guess. But (1) when perceiving it, we immediately see it as a pattern. If the time given for looking is very short, it may exist for us as nothing more than just a

pattern. An icon, we could say. (2) If the time given is some tens of milliseconds longer, then we can seemingly recognize the pattern as a reference. Accustomed to reading the Latin script, we grasp it in one piece and at the same time already know that this hints to somebody. Like an index. (3) In order to see this as writing, as a pattern that consists of letters that are *made*, a bit more is needed. That is, perceiving it as *readable*, which is the same as primarily *makeable*, we are on the level of its perception as an *emon*<sup>11</sup>. (4) And there is also a next level of almost immediate perception, when we grasp it as a *name*, as somebody's name. This means – a symbol. We may hypothesize that, whether the 'Don' is recognised as an icon, an index, an *emon*, or a symbol, is dependent on the size of the time unit in which the seeing occurs. For different species, this time unit is different.

This hypothesis – or maybe it is merely an observation – is concordant with a view that the operation of interpretation is of different complexity in each case. We follow here Terrence Deacon's (1997) idea that the sign of the next level is consisting of signs of the previous level. This is illustrated by the figures at the left from 'Don' (Fig. 1).

Thus, the 'Don' is there the same, but we can comprehend it in various ways in terms of sign types. And there is another important observation. An infant, who does not recognize letters, can learn to recognize such a pattern, for instance, as a reference to its friend. Moreover, that a pattern may be related to something else is learnable to many animals, while the same animal may never be able to grasp that the pattern as readable; and if even that is the case for some primate, then seemingly no other animal can understand that this is a given name.

Understanding is what belongs to the present, to the subjective Now. Thus, it is evident that the Now itself has to expand in order to seat more elements to be related.

In the case of the (1) simplest type of learning, only one object should be recognized. That type of learning is called *imprinting* (Fig. 1). In case of (2) associated learning (*conditioning*), two objects that appear correlated are put into relation. (3) *Imitating* or social learning requires a connection between certain behaviour perceived in two ways and the same behaviour as created – so it is more complex, with

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<sup>11</sup> This term is used for a type of sign which is more complex than index but less complex than symbol. *Emon* is the sign based on imitation. Social learning assumes *emonic* signs.

three elements to be related. (4) Establishment the relation on the basis of convention (e.g., naming, *conventioning*) can also be a version of learning – though of more complex type than the earlier three. It assumes a capacity for freely combining and recombining different signs, with minimally four elements altogether.

The more complex sign relation established, the more that has to take place at the present, during the Now. This is also what *attention* is, obviously. While attention expands, the present grows, signs grow. This can be seen as the basis for *expanding umwelt*.

## 10. Life and automata, semiosis and codes

“Out of such ever-renewing indeterminacy and possibility [...] can creative engagement [...] arise, and the habit-taking of actualized relationships begin” (Favareau 2013: 149). We have argued that semiosis – interpretation – takes place in the Now. The triadicity of the sign is irreducible precisely because the representamen, object, and interpretant do not appear in the sequence but are simultaneous. Although, there is something that follows, it begins from this establishment of the sign relation. This is the product of the choice, of interpretation – the shift in scaffolding, which makes the relation at least slightly repeatable. This is the beginning of habit. A similar choice, when repeated, can lead to the hardening of the habit, which, in the end, can work already automatically, even without semiosis involved any more. In this way, semiosis can produce the automaton, it can build a machine. And so it is – every organism is a hybrid of semiosis and machine. Or, in other terms, of semiosis and codes, the latter being the products of the former.

## 11. :-))

Thus, a step, another step in understanding - which is cyclic, because each generation of students make the steps again. And which is not exactly cyclic, because we can deviate or exercise bias towards better understanding.

We tried to explain where the possibility comes from. It occurs that together with this, we can evidently explain where the present comes from. And, further, since the present can expand, it seems that the complexification of semiosis is directly related to the size of the subjective present.

These thoughts should be an object of detailed and thorough analysis and rethinking. We need to find and pay attention to gaps in this thread of thought. If you find here anything inconsistent, or any step in logic and reasoning that should be reworked, let us discuss. Science is the mutual help in understanding. We may be close, here, to understanding what is the possibility, and what are the possibilities.

What we learn may not last. The development of knowledge is not only cumulation, it is also refutation and forgetting. If something was not consistent in what we have constructed, or not relevant, we do not need to be sad, because we have done the best we could. That's how science works. That's life.

Don has fantastic capacity for empathically delving into the other's reasoning. He tries, on every occasion of biosemiotic conversation, to reach the common understanding. He *feels* ideas. And he feels where we need to focus. He is a creator of biosemiotic creativity. He knows we can only do it together.

## References

- Baer, Karl Ernst von 1864. Welche Auffassung der lebenden Natur ist die richtige? Und wie ist diese Auffassung auf die Entomologie anzuwenden? In: Baer, Karl Ernst von, *Reden gehalten in wissenschaftlichen Versammlungen und kleinere Aufsätze vermischten Inhalts*, Bd. 1. St. Petersburg: H. Schmitzdorff, 237–284.
- Barbieri, Marcello 2003. *The Organic Codes: An Introduction to Semantic Biology*. Cambridge: Cambridge University Press.
- Deacon, Terrence 1997. *The Symbolic Species: The Co-Evolution of Language and the Human Brain*. London: Penguin.
- Deacon, Terrence 2012. *Incomplete Nature: How Mind Emerged from Matter*. New York: W. W. Norton & Company.
- Fernández, Eliseo 2010. Life and temporality: The place of biosemiotics within Peirce's general semiotics. *Chinese Semiotic Studies* 4(2): 289–300.
- Fraser, Julius Thomas 1978. *Time as Conflict: A Scientific and Humanistic Study*. Basel: Birkhäuser Verlag.
- Gorlée, Dinda L. 2009. A sketch of Peirce's Firstness and its significance to art. *Sign Systems Studies* 37(1/2): 205–269.
- Favareau, Donald 2007a. Animal sensing, acting and knowing: Bridging the relations between brains, bodies and world. In: Witzany, Günther (ed.), *Biosemiotics in Transdisciplinary Contexts: Proceedings of the Gathering in Biosemiotics 6, Salzburg 2006*. Salzburg: Umweb, 61–69.
- Favareau, Donald 2007b. How to make Peirce's ideas clear (first in an inexhaustible series). In: Witzany, Günther (ed.), *Biosemiotics in*



- Transdisciplinary Contexts: Proceedings of the Gathering in Biosemiotics 6, Salzburg 2006.* Salzburg: Umweb, 163–173.
- Favareau, Donald 2013. Agapastic exploration of the biosphere: Alterity and biosemiosis. In: Petrilli, Susan (ed.), *Writing, Voice, Undertaking.* (Language, Media & Education Studies 56.) New York: Legas, 143–150.
- Favareau, Donald 2015c. Creation of the relevant next: How living systems capture the power of the adjacent possible through sign use. *Progress in Biophysics and Molecular Biology* 119: 588–601.
- Fernández, Eliseo 2010. Life and temporality: The place of biosemiotics within Peirce's general semiotics. *Chinese Semiotic Studies* 4(2): 289–300.
- Kull, Kalevi 2009. Biosemiotics: To know, what life knows. *Cybernetics and Human Knowing* 16(3/4): 81–88.
- Kull, Kalevi 2012. Semiosis includes incompatibility: On the relationship between semiotics and mathematics. In: Bockarova, Mariana; Danesi, Marcel; Núñez, Rafael (eds.), *Semiotic and Cognitive Science Essays on the Nature of Mathematics.* Muenchen: Lincom Europa, 330–339.
- Kull, Kalevi 2015. Semiosis stems from logical incompatibility in organic nature: Why biophysics does not see meaning, while biosemiotics does. *Progress in Biophysics and Molecular Biology* 119(3): 616–621.
- Nadin, Mihai (ed.) 2016. *Anticipation Across Disciplines.* (Cognitive Systems Monographs 29.) Berlin: Springer.
- Pöppel, Ernst 1997. The brain's way to create "nowness". In: Atmanspacher, Harald; Ruhnau, Eva (eds.), *Time, Temporality, Now: Experiencing Time and Concepts of Time in an Interdisciplinary Perspective.* Berlin: Springer-Verlag, 107–120.
- Pöppel, Ernst; Bao, Yan 2014. Temporal windows as a bridge from objective to subjective time. In: Arstila, Valtteri; Lloyd, Dan (eds.), *Subjective Time: The Philosophy, Psychology, and Neuroscience of Temporality.* Cambridge: MIT Press, 241–262.
- Stamps, Jeffrey S. 1980. *Holonomy: A Human Systems Theory.* Seaside: Intersystems Publications.
- Weber, Andreas 2016. *Biopoetics: Towards a Biological Theory of Life-as-Meaning.* (Biosemiotics 14.) Berlin: Springer.



# **A serious case of approach-avoidance: Biosemiotics meets Anthropocene**

***Myrdene Anderson***

Purdue University, West Lafayette, USA

## **Overture**

Humans live in and through storying, as does science. Stories, like bionts, link up in potentially all angles of space and time, drawing on a compost of ideas, of energy, of information. This story is called “Anthropocene”.

## **Situating the subject-object**

For several years now, anthropological discourse, more than semiotic discourse, has embraced without hesitation the fuzzy notion of the Anthropocene, an unofficial contemporary epoch still pending acceptance by geology. In anthropology, the newer and frankly anthropocentric term persists despite our also recognizing the Holocene, an official period commencing 11,700 years before the present, coincident with the first significant record of human impacts on our substrate, the earth. Anthropologists and the lay public generally appear enamored of the Anthropocene, allowing others to argue about its inception and official justification. Yet, this epoch is nothing we humans should be proud of. Will the Anthropocene’s utility rest on its eventually undermining our hubris? Or will the notion continue to be used as a distraction?

The very notion – that humans now so overwhelmingly shape their earthly substrate that the situation calls for a separate epoch, the Anthropocene, named by and for our species – strikes many as a stroke of hubris. A quarter-century ago, a few scientists took it upon themselves, albeit unofficially, to label such a period the Anthropocene. The Anthropocene still has no single criterial initiation date nor any agreed method of aligning it with or within or without the Holocene. As to the Anthropocene’s end, well, that is the apocalyptic question that few are willing or able to contemplate.

Perhaps, therefore, the newly-named epoch incubated fully two decades before igniting – first among earth and atmosphere scientists and biologists, then for the public at large, finally amongst social scientists unable to ignore the Anthropocene and at the same time primed to study both the phenomenon and its detractors – scientists and lay people alike. Pursuant to the effect of humans doing all that they do, as summed up in the remarkable 2013 volume edited by Strauss, Rupp, and Love (*Cultures of Energy: Power, Practices, Technologies*), and quite aside from indelible traces left in the geologic chronostratigraphic record by cultural activities, other living things respond to this epoch as well, dispersing or retracting, thriving or dissipating, in a constantly nuanced biogeographical dance (cf. Capinha *et al.* 2015; Ovalle-Rivera *et al.* 2015). Human debris accumulates even as the planet erodes and species go extinct, all while the atmosphere sweetens and the oceans sour. Oscillating, accelerating, the carpet moves beneath us.

At the same time, facts wiggle around too, as is their wont (Howlett, Morgan 2011). Sometimes the Anthropocene is collapsed with discussion of climate change, leaving obscure their relation, although capitalization does make the former more of a contender, recording the effects of climate change (with or without a Paris Accord) into a permanent record for a longer haul, that in geology.

Enter, anthropology, the discipline most comfortable in dealing with humans and their Umwelt both macroscopically and microscopically, through time (bioanthropology and archeology) and across space (ethnology), taking into account languages, cultures, psychologies, sociologies, political-economies, ecologies. Indeed, anthropological discourse was among the earliest social sciences to embrace the notion of the Anthropocene. How could we anthropologists resist? Indeed, a virtual growth industry of lay and scientific publications had cropped up – books (cf. Purdy’s *After Nature: A Politics for the Anthropocene*, 2014), articles (cf. Ruddiman’s 2003 “The anthropogenic greenhouse era began thousands of years

ago”), and working groups and specialized journals (cf. *The Anthropocene Review*: Biermann 2014; Malm, Hornborg 2014), in at least a number of Indo-European languages. These thinkers pose questions merely implied in Curt Stager’s 2011 book, *Deep Future: The Next 100,000 Years of Life on Earth*, itself obviously tipping toward optimism!

Within and without anthropology, and now also semiotics, incorporating empirical and fantastical data representing the kaleidoscope of perspectives that the new epoch has provoked, the literature shuttles from alarm to shame to pride to intervention to hope and back again. Regardless of whether humans are to take credit or blame or something else, for or from or about the Anthropocene, this much is clear: The Anthropocene is Us.

### **Dealing with inscrutables**

Geologically, the Anthropocene might commence when the earth itself responded to the presence of this one key species, a surviving Pleistocene megafauna first tottering and then gaining foothold at the top of its trophic level, aided and abetted by linguiculture and increasingly leaving material traces. Often, one reads that the industrial revolution produced a singular precipitate that demands recognition as a boundary for a new era, quite aside from the machineries that one day may be rediscovered here and there. But mostly “here”. The industrial revolution had few centers, and many peripheries, some still waiting, with hope or dread, behind the curtains.

There have been many other suggestions – serious or playful, precise or vague – about how to fix the beginning of the Anthropocene. What is sought is a stratigraphic (most likely ice core) index to launch the epoch, much as the Holocene was dated to 11,700 years before present, just yesterday, in 2008 (*Nature* editorial, 11 March 2015).

We conventionally date the industrial revolution of the west to 250 years before the present, but even that would have to be on a sliding scale. In 2015, geologists studying high Andean ice cores found preserved dust and metals indicating the onset of an “Anthropocene” in South America predating the European industrial revolution by 240 years (Uglietti *et al.* 2015), no doubt due to mining activities. Yet, there were mines of various sorts and scales scattered around the world earlier in the Holocene, roughly coincident with the

first cultivation of plants and our co-domestication with certain other animals, and not coincidentally, the initial surge of still continually growing human populations.

Consequently, the Holocene and Anthropocene might as well be coterminous. The labeling of our human era must take a back seat to its implications, surely for science. Alas, in popular culture, the Anthropocene has set uncontested roots. It falls off our tongues. It does seem, though, that in English the accent falls on the first syllable in North America, but on the second in Britain and amongst Europeans speaking English.

At the time of this writing, official bodies such as the International Union of Geological Sciences and the International Commission on Stratigraphy seem reluctant to officially recognize the Anthropocene as an epoch with any initiating vent or date, despite popular support for the idea.

### **A shape-shifter for shifting shapes**

That the Anthropocene has not been pinned down, and that it evokes such a panoply of responses, makes it a veritable shape-shifter, a Trickster for our times (cf. Bassil-Morozow 2015; Hynes, Doty 1993; Radin 1956; Williams 2012), bearing the message that a little bit of hubris goes a long way! Humans stumble on their own blinding confidence, in their haste and on their waste. Other manifestations of Trickster repeatedly crop up in virtually every society, with much the same message: We could all be riding for a fall.

But semiotics moves with the times, invigorated by occasional enlightenment from its past. Minor emerging chords within the field – from post-humanism to the ontological turn to neo-materialism – problematize both the notion of the Anthropocene and the efficacy of any cultural response, let alone of any scientific proposals for concrete interventions (Blasdel 2017; LeCain 2015; Morton 2013; Weber, Kurt 2015). These voices (including Donna Haraway, Michael Jackson, Bruno Latour, Naomi Klein, Paul Stoller ...) relate specific concerns, cite data (or are they capta?), outline a range of responses to perceived problems of our own making, while puzzling about the rest of the probable iceberg beyond our ken, whether conceptualized as “states” or “processes”.

## Finding mind-holds for the human footprint

A condition of ecomyopia surfaces when it comes to our species being unwilling or even unable to take stock of the state of our collaborating substrate and sibling species. Human apprehension of time is not only inflected by culture, language, and history, but by the habits of each generation to selectively forget and re-remember, always shifting baselines, successively leaving fallow the most recent pasts (cf. Schacter 1997). Fernand Braudel's *longue durée* (1996) may apply to social and cultural memory, even though that hardly approaches any span deemed significant by geologists.

Somewhere in between the historian and the earth scientist will be the semiotician and ecologist, dealing with the relations that obtain within the significant surrounds of living things, their *umwelten*. Perhaps contemporary discourses about "grand challenges" and "sustainability" aim to be meaningful within longer ecological frameworks, though the motivations fueling these discourses appear crassly political at this time. Contemporary discourse about grand challenges reduces them to discrete economies rather than to indeterminate ecologies. The grand challenges oddly echo the four elements of the ancient Greeks – earth/air/fire/water – that translate now to food/air/oil/water.

Another buzzword of our times, sustainability, whether Rorschach or quicksand, decorates the surface of this literature, in virtual defiance of the ecological record. Given the prehistory and history of our species throughout the Holocene, sustainability finds little resonance. Recurring natural and cultural conditions, and recurrent natural and cultural disasters, seldom result in any efficacious human response of a preventative sort. Humans are slow learners, despite and/or because of our habits of tolerating both complication and complexity, our eagerness to cultivate faith in our technological offspring, and our tendency to be blind to cycles.

Ecomyopia sums up that tendency for individuals, and their societies, to fail to recognize and/or to actively ignore and/or to fail to act on new information relating to their social and ecological surroundings. Is sustainability a goal, a fantasy, or just an oxymoron (cf. Alrøe, Noe 2013; Anderson 2011)? Considerable hubris is expended in tomes such as Jeffrey D. Sachs' *The Age of Sustainable Development* (2015), professing that sustainability is around the corner.

Humans are inclined to pat themselves on the back for the magnitude of their problems and for the cleverness of their conjured

solutions, while using the other hand to shield their eyes from the bottom lines advancing from all directions.

Perhaps the anthropocentrism that led to and so characterizes the Anthropocene might dissipate, or refract to force-feed attention on the inevitability of this very habit of anthropocentrism. Christopher Howard (2013) inquires whether we can overcome anthropocentrism, perhaps embracing a prospect of “convivial horizons”. Alas, anthropocentrism cannot so simply just be buried with our trash (cf. Adams, Anderson 1994). Anthropocentrism thus foregrounded is a condition to be overcome. But politics, one of large societies’ prominent institutions for dealing with the big picture, doesn’t fare so well with the *longue durée*, and often amplifies and/or stalls problems at hand. Amartya Sen in 1987 asserted that famines do not afflict minimally democratic societies, yet today we find also these societies to be ever more fragile, variably-hungry quilts of rich and poor.

### **Stepping back for better vantage**

Animals other than humans, or alloanimals (cf. Count 1973), have always been integral to our significant surround, along with plants and anything else apparent to us, particularly given our faculty of sight (overwhelming other senses), while enabled and tempered by our linguiculture (Anderson 2008; Pettinen, Anderson 2015). Now, however, we learn that our own biologies are below all thresholds in space and in time. Epigenetics assures the near-Lamarckian inheritance of some acquired characteristics through time; and in space, we are fused with mutually constitutive and constituting microbiotic “others”. This microbiome that our bodies host orchestrates our lives at least as much as we orchestrate its. Altogether, following Lynn Margulis, any organism constitutes a “holobiome” (Guerrero *et al.* 2013) nested – no, tangled – with other opportunistic holobionts, surviving, or not, and if surviving, “sustaining” our relational cosmos for the moment.

Anthropology – the most humanistic of the sciences and the most scientific of the humanities (and thereby quintessentially semiotic) – has kept its holistic toolkit open to allow for the fast and hard and large yet newfangled “big data”, as in “digital humanities” (cf. Moretti 2013), without sacrificing its respect for the old-fashioned slow and soft data that is more commensurable with our scale of



insertion into “natural” ecologies<sup>12</sup>. But hierarchies have emerged, in semiotics less than in anthropology and elsewhere throughout the realm of knowledge-building, privileging the former, “hard”, apt to be quantitative, over the latter, “soft”, apt to be qualitative (cf. Graham, Kantor 2007). In 1987, Jared Diamond noted what we semioticians already and always knew: that soft sciences are often harder than hard sciences.

Semiotics would never be dubbed “easy”, but being so perceived by funding agencies, it may be deemed low on the totem pole regarding priorities for research applicable to the Anthropocene. Semiotics isn’t always easy to digest, either, taking wider, longer, often abstract, sometimes more critical perspectives, not amenable to business as usual or immediate payoffs. Semiotics can also appear opaque to the uninitiated. It is also the case, regarding research funding, that agencies tasked with evaluating innumerable proposals and with dispensing vast, however diminishing, funds, can’t be bothered with the modest requests typical of the needs of semioticians and anthropologists.

Ever since humans emerged on the planet, they have evinced an exuberance, perhaps that “eccentric positionality” noted by Helmuth Plessner almost a century ago (Plessner 1999[1924]; Grene 1966), that has left more traces than humans themselves have ever mustered the courage to read. So we humans acknowledge things, engage with objects, and read signs that themselves are reading us, recursively. If we add awareness, imagination, and curiosity, and stir, those traces melt into processes less amenable to labeling in this hearer-oriented English language (cf. Durst-Andersen 2011). At the same time, we humans are immersed in ecosystems that dance to dialects other than our addictions to forgetting and remembering. Just as life animated the “inert” planet, manifold linguöcultural habits of humans infect the cosmos as well, short of directing it to our ends. Humans have only reluctantly become aware of the slippage between equifinality and multifinality in the lesson from King Midas: Be careful what you wish for.

It seems evident that humans do drive the Anthropocene, whether the epoch is demoted to be absorbed by the Holocene or not. So little of the literature, though, bothers to take seriously the growth in human numbers as the more concrete generator of human impacts on their *umwelt* and on the planet, if not the cosmos (Anderson 2011;

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<sup>12</sup> E.g., [slow-science.org](http://slow-science.org).

2016). Growth. Population growth has moved in our own generations from totemic goal to taboo subject (Anderson, Bisanz 2016). This scenario is ripe for biosemiotics. Meanwhile, all our disciplines should be braced for retrofitting as we have more cross-cultural and cross-language and cross-cognitive analyses to apply to any domain, Anthropocene included.

## Coda

Humans live in and through storying, as does science. Stories, like bionts, link up in potentially all angles of space and time, drawing on a compost of ideas, of energy, of information, of myths, of denials, of erasures. This story was called “Anthropocene”, or was it “grand challenges”, or was it “sustainability”, or was it “immortality”? Whatever the story, it is now distracting us from actually declaring the wardrobe of that Emperor, in still another story.

## References

- Adams, Walter R.; Anderson, Myrdene (eds.) 1994. *Refiguring Debris – Becoming Unbecoming, Unbecoming Becoming*. (Special Issue.) *The American Journal of Semiotics* 11(1/2).
- Alrøe, Hugo F.; Noe, Egon 2013. Observing environments. *Constructivist Foundations* 8(1): 39–62.
- Anderson, Myrdene 2008. Forensic senses in ecosemiotics. In: Deely, John (ed.), *Semiotics 2008*. Ottawa: Legas Press, 147–155.
- Anderson, Myrdene 2011. Making sense of “sustainability”. Paper presented at the 11th International Gatherings in Biosemiotics, Rockefeller University for Biomedical Research, New York, June 2011.
- Anderson, Myrdene 2016. Ethics revisited. Paper presented at the 12th International Congress of Qualitative Inquiry, Urbana, Illinois, May 2016.
- Anderson, Myrdene; Bisanz, Elize 2016. Biopower: Entangling moralities and mortalities. Paper presented at the 16th International Gatherings in Biosemiotics, Prague, July 2016.
- Bassil-Morozow, Helena 2015. *The Trickster and the System: Identity and Agency in Contemporary Society*. New York: Routledge.
- Biermann, Frank 2014. The Anthropocene: A governance perspective. *The Anthropocene Review* 1(April): 57–61.
- Blasdel, Alex 2017. ‘A reckoning for our species’: The philosopher prophet of the Anthropocene. *The Guardian*, 15 June 2017.

- Braudel, Fernand 1996. *The Mediterranean and the Mediterranean World in the Age of Philip II*. Berkeley: University of California Press.
- Capinha, César; Essl, Franz; Seebens, Hanno; Moser, Dietmar; Miguel Pereira, Henrique 2015. The dispersal of alien species redefines biogeography in the Anthropocene. *Science* 348(6240) (12 June): 1248–1251.
- Count, Earl W. 1973. *Being and Becoming Human: Essays on the Biogram*. New York: Van Nostrand Reingold Company.
- Diamond, Jared 1987. Soft sciences are often harder than hard sciences: Opinion. *Discover* 8(8): 34–39.
- Durst-Andersen, Per 2011. *Linguistic Supertypes: A Cognitive-Semiotic Theory of Human Communication*. (Semiotics, Communication and Cognition 6.) Berlin: De Gruyter Mouton.
- Graham, Loren; Kantor, Jean-Michel 2007. "Soft" area studies versus "hard" social sciences: A false opposition. *Slavic Review* 66(1): 1–19.
- Grene, Marjorie 1966. Positionally in the philosophy of Helmuth Plessner. *Review of Metaphysics* 20: 250–277.
- Guerrero, Rau; Margulis, Lynn; Berlanga, Mercedes 2013. Symbiogenesis: The holobiont as a unit of evolution. *International Microbiology* 16(3): 133–143.
- Howard, Christopher 2013. Posthuman anthropology? Facing up to planetary conviviality in the Anthropocene age. Paper delivered at the Department of Anthropology, University of Sydney, symposium on: A Post-Human World? Rethinking Anthropology of the Human Condition, 14–15 June 2013.
- Howlett, Peter; Morgan, Mary S. (eds.) 2011. *How Well Do Facts Travel? The Dissemination of Reliable Knowledge*. Cambridge: Cambridge University Press.
- Hynes, William J.; Doty, William G. (eds.) 1993. *Mythical Trickster Figures: Contours, Contexts, and Criticisms*. Birmingham: University of Alabama Press.
- LeCain, Timothy James 2015. Against the Anthropocene: A neo-materialist perspective. *International Journal for History, Culture, and Modernity* 3(1): 1–28.
- Malm, Andreas; Hornborg, Alf 2014. The geology of mankind? A critique of the Anthropocene narrative. *The Anthropocene Review* 1 (April): 62–69.
- Moretti, Franco 2013. *Distant Reading*. London: Verso.
- Morton, Timothy 2013. *Hyperobjects: Philosophy and Ecology after the End of the World*. Minneapolis: University of Minnesota Press.
- Nature* editorial 2015. All in good time: Stratigraphers have yet to decide whether the Anthropocene is a new unit of geological time. (Editorial.) *Nature* 519: 129–130.
- Ovalle-Rivera, Oriana; Laderach, Peter; Bunn, Christian; Obersteiner, Michael; Schroth, Gotz 2015. Projected shifts in *Coffea arabica* suitability among major global producing regions due to climate change. *PLOS ONE*, 14 April.

- Pettinen, Katja; Anderson, Myrdene 2015. Decanting some sense from and about the senses. In: Sbrocchi, Leonard G. (ed.), *Semiotics 2014*. Ottawa: Legas Publishing, 375–384.
- Plessner, Helmuth 1999 [1924]. *The Limits of Community: A Critique of Social Radicalism*. (Wallace, Andrew, trans. from the German.) New York: Prometheus Books.
- Purdy, Jedediah 2014. *After Nature: A Politics for the Anthropocene*. Cambridge: Harvard University Press.
- Radin, Paul 1956. *The Trickster: A Study in American Indian Mythology*. New York: Schocken Books.
- Ruddiman, William F. 2003. The anthropogenic greenhouse era began thousands of years ago. *Climate Change* 61(3): 261–293.
- Sachs, Jeffrey D. 2015. *The Age of Sustainable Development*. New York: Columbia University Press.
- Schacter, Daniel L. (ed.) 1997. *Memory Distortion: How Minds, Brains, and Societies Reconstruct the Past*. Cambridge: Harvard University Press.
- Sen, Amartya 1987. *On Ethics and Economics*. New York: Basil Blackwell.
- Stager, Curt 2011. *Deep Future: The Next 100,000 Years of Life on Earth*. New York: Thomas Dunne Books.
- Strauss, Sarah; Rupp, Stephanie; Love, Thomas (eds.) 2013. *Cultures of Energy: Power, Practices, Technologies*. Walnut Creek: Left Coast Press.
- Uglietti, Chiara; Gabrielli, Paolo; Cooke, Colin A.; Vallenga, Paul; Thompson, Lonnie G. 2015. Widespread pollution of the South American atmosphere predates the industrial revolution by 240 y. *PNAS* 112(8): 2349–2354.
- Weber, Andreas; Kurt, Hildegart 2015. Toward cultures of aliveness: Politics and poetics in a post dualistic age, an Anthropocene manifesto. *Solutions* 6(5): 58–65.
- Williams, David 2012. *The Trickster Brain: Neuroscience, Evolution, and Narrative*. Lanham: Lexington Books.

## **The first address**

***Yagmur Denizhan***

Bogazici University, Istanbul, Turkey

Once I have been told that some psychological counselors, when they have a new counselee with higher education, ask them to describe their first thesis. The person who told me this had herself been in such a position. She admitted that initially she found the request rather irrelevant only to discover – as soon as she started describing – how much such a thesis, the first one of one’s own choice, could reveal about the person, her personality and her mode of being.

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The inspiring presentation on the neurosemiotic origins of intersubjectivity on a beautiful May day in Copenhagen back in 2001 was certainly not Don’s first project, but his first address to what would in the course of the years evolve into the biosemiotics community. Both the choice of the subject for the first gathering of a newly emerging interdiscipline and how he offered a biological foundation, from which the notions of the well-established discipline of human semiotics could emerge, were astute. Don’s exposition, which made use of the rather recent findings by Rizzolatti and colleagues (Rizzolatti *et al.* 1996) on mirror neurons, and managed to suggest a grounding for empathy, intersubjectivity and human semiotics

without being reductionistic, was one of the highlights of the biosemiotic spectacle that was beginning to furnish itself a spectator.<sup>13</sup>

But the story about the divining feature of “first theses” made me recognise in awe another aspect of Don’s first presentation to a Gathering in Biosemiotics; how much it revealed inadvertently about Don, his personality and his prospective role in the biosemiotics community. Indeed, if I were asked to describe Don with a single word, that word would be empathy. Truth is, empathetic people are many; but only a few of them like Don are able to build a responsible self out of this empathy, the ability which is built on the perception of action regardless of its subject, and use this capacity to return to the community a myriad of useful deeds.

While I was leafing through the file of the first Gathering, seeking for inspiration for this writing, I discovered the star I had put next to Don’s name. There was no further explanation. After so many years of acquaintance which, in terms of actual time, was rather limited, but involved intensive conversations during the coffee breaks and dinners in conferences and a little bit more during his visit to Turkey together with dear Emi, I can say that this star – beyond being a sign of appreciation for his successful presentation – denoted a prescient impression of someone who would reveal himself as a person with a heart of gold, a wonderful friend, and a valuable scientist whose insight feeds on the prosperous underground resource of empathy.

## References

- Favareau, Donald 2002. Beyond self and other: On the neurosemiotic emergence of intersubjectivity. *Sign Systems Studies* 30(1): 57–100.
- Rizzolatti, Giacomo; Fadiga, Luciano; Gallese, Vittorio; Fogassi, Leonardo 1996. Premotor cortex and the recognition of motor actions. *Cognitive Brain Research* 3(2): 131–141.

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<sup>13</sup> In his contribution to the First Gatherings in Biosemiotics (2001) titled ‘Beyond self and other: The neurosemiotic emergence of intersubjectivity’ (Favareau 2002), in order to pose the problem of bootstrapping the self, to which he would then offer a biosemiotic solution, Don Favareau quotes Merleau-Ponty’s *The Prose of the World*: “The spectacle begins to furnish itself a spectator who is not I but who is reproduced from me. How is it possible? How can I see something that begins to see?”.

# Cultivating together the ‘Doctrine of Signs’

**Susan Petrilli**

University of Bari, Italy

*‘On ne dira jamais assez quel amour (pour l’autre, le lecteur) il y a dans le travail de la phrase.’ Charité du Théique, Agapé de la syntaxe? Dans la théologie négative, l’Agapé est pénétrée d’Éros; donc: érotisme de la Phrase ‘lisible’? (Roland Barthes 2002 [1978]: 514)*

To Don Favareau I am connected by a common interest in biosemiotics, a relatively new discipline and orientation in the sciences, developing at the interface between the life sciences and the sign sciences, the natural sciences and the human sciences. Our encounters have been occasioned by conferences dedicated to biosemiotics, where we have found ourselves sharing the conviction that biosemiotics is not merely the expression of mutual collaboration between two clearly defined and separate disciplines which, at a certain point, decide to enter into dialogue with each other and exchange findings and methods. Instead, biosemiotics is the current situation, phase, result developed in an ecumenical framework, as prognosticated by Thomas A. Sebeok (1979: ch. 4; 2010), obtained by the biological sciences and together by enquiry into signs, semiosis, communication.

We have each worked on this issue from different perspectives and according to different interests, contributing together notwithstanding such differences to the development of the presupposition that subtends biosemiotics as an essential founding element: that is, echoing Sebeok (2001a; 2001b; Petrilli, Ponzio 2001) that semiosis and life converge, that the study of signs and the study

of the conditions for life inevitably encounter one another and join forces. It is in this encounter that today these two fields of study and research are characterized and it is here, at the interface between the life sciences and the sign sciences, that their categories and instruments of analysis are constituted and perfected.

An important moment in our reflections on the contribution made by Donald Favareau to the characterization of biosemiotics in the sense described above is represented by my article-review, co-authored with Augusto Ponzio for *Semiotica* (Petrilli, Ponzio 2013), the journal of the International Association for Semiotic Studies, concerning the book *Essential Readings in Biosemiotics: Anthology and Commentary*, edited by Don Favareau, precisely (Favareau 2010). This book is a monumental anthological work in which Favareau carefully reconstructs the pieces, that is, the texts, and contributions made by scholars from different venues and with different intellectual formations that gradually modelled the current configuration of biosemiotics, making it what it is today. The overall design and choices at the basis of the construction of this volume are amply described and explained in detail by Favareau in the twelve pages forming his Preface and the eighty pages of his Introduction.

But before saying any more about the orientations and research goals that have presented the occasion and the basis of our “professional” relationship with Don Favareau, it pleases me to refer to another aspect that I believe is important, indeed vital, for the sake of conducting research together in a given scientific field or dominion. And it is the case especially when there is involved a question of the *human sciences*. “Human” – a qualification that interests me greatly – not in the sense of sciences that belong to the *Humanities*, but rather those that are based upon *human values*, therefore upon a form of humanism which must be continuously renewed as part of a continuous renewal of the disposition to listening, to collaboration, to hospitality, to the welcome, such that we may well and truly “cultivate” a given discipline together, such that there is a common *humus*, to the end of developing a *humanitas* that is effectively such at ever higher degrees (it would seem that *humanitas*, like *humilitas*, actually derives from *humus*, land, earth that is fertile because it is cultivated together).

I wish to evoke friendship. And I will do so by citing an excerpt by Roland Barthes from a text he published in 1978, under the title *L’image*, from which I have drawn the epigraph above to these reflections (Barthes 2002 [1978]: 519):



*Acolouthia*: [...] le cortège d'amis qui m'accompagnent, me guident, auxquelles je m'abandonne. Je voudrais désigner par ce mot ce champ rare où les idées se pénètrent d'affectivité, où les amis, par le cortège dont ils accompagnent votre vie, vous permettent de penser, d'écrire, de parler. Ces amis: je pense pour eux, ils pensent dans ma tête.

Friendship, "cette couleur du travail intellectuel (ou d'écriture)", is that which, beyond a common interest in biosemiotics, ties me to Don Favareau. It is what has moved in me the desire to write these pages on the occasion of this sixtieth birthday. My friendship with Don Favareau is effectively *acolouthia*, in the sense discussed by Barthes, "cortège d'amis": and it connects us to others, whom also give this particular *colouring* to the common work of researching together: Kalevi Kull, Paul Cogley, Marcel Danesi, Augusto Ponzio... as well as to others who are no longer with us, including Thomas A. Sebeok, Umberto Eco, Solomon Marcus, Tullio De Mauro, John Deely. And our shared affection for John Deely is what has most validated our friendship (mine and Augusto's) with Don Favareau.

Working together in the same field, cultivating together the same discipline, does not at all exclude diversified orientations, different commitments and engagements, the possibility of contributing in different ways to the development and deployment of the same discipline. On recovering the work carried out by Victoria Welby through her signifiacs (Petrilli 2009), also in consideration of her epistolary exchanges with Charles Sanders Peirce (Hardwick 1977), and proceeding beyond in the wake of Charles Morris and of Thomas A. Sebeok, rereading from a perspective inaugurated in Italy by Giovanni Vailati and continued by Ferruccio Rossi-Landi (Petrilli 2014; Ponzio 2009), I have been orienting the direction of my research in the biosemiotic domain according to that particular bent in semiotics which, in collaboration with Augusto Ponzio, we have indicated as *semioethics* (Petrilli, Ponzio 2003; 2010; Petrilli 2010).

Semiotics, in the form of biosemiotics as well, must now accept the responsibility of denouncing incongruencies and states of *malaise* – on the social, biological, environmental levels – in our global world with the same energy, instruments and social possibilities produced by the global communication-production system itself. Semiotics must now be ready to denounce the dangers inherent in this system for life over the entire planet. *Semeiotics* or *symptomatology* whose sense and purpose is determined by the commitment to the well-being of life – not only human life, but all of life over the whole planet, which

is closely connected to the human – delves into and develops that direction or bent with which it was endowed from the very beginning (the key reference here, made repeatedly by Sebeok, is to Hippocrates and Galen), characterizing itself, in terms of the denomination that we have chosen on this account, that is to say, as *semioethics*. John Deely had also shown a great interest in *semioethics*, in his writings and in our ongoing conversations with him, even during his sickness, through to the time of his death, as all the friends in our *acolouthia* know. Of this “cortège d’amis”, to evoke Barthes once again, of this *acolouthia*, this brief paper recognizes Don Favareau as a key member.

## References

- Barthes, Roland 2002 [1978]. *CŒuvres complètes*, tome 5: *Livres, textes, entretiens, 1977–1980*. (Marty, Éric, ed.) Paris: Seuil.
- Favareau, Donald (ed.) 2010. *Essential Readings in Biosemiotics: Anthology and Commentary*. (Biosemiotics 3.) Dordrecht: Springer.
- Hardwick, Charles (ed.) 1977. *Semiotic and Significs: The Correspondence between Charles S. Peirce and Victoria Lady Welby*. (With the assistance of James Cook.) Bloomington: Indiana University Press.
- Petrilli, Susan 2009. *Signifying and Understanding: Reading the Works of Victoria Welby and the Signific Movement*. (Semiotics, Communication and Cognition 2.) Berlin: De Gruyter Mouton.
- Petrilli, Susan. 2010. *Sign Crossroads in Global Perspective: Semioethics and Responsibility*. (Deely, John, ed., preface.) New Brunswick: Transaction Publishers.
- Petrilli, Susan 2014. *Sign Studies and Semioethics: Communication, Translation and Values*. (Semiotics, Communication and Cognition 13.) Boston: De Gruyter Mouton.
- Petrilli, Susan; Ponzio, Augusto 2001. *Sebeok and the Signs of Life*. London: Icon Books.
- Petrilli, Susan; Ponzio, Augusto 2003. *Semioetica*. Rome: Meltemi.
- Petrilli, Susan; Ponzio, Augusto 2010. Semioethics. In: Copley, Paul (ed.), *The Routledge Companion to Semiotics*. London: Routledge, 150–162.
- Petrilli, Susan; Ponzio, Augusto 2013. Biosemiotic scenarios. *Semiotica* 195: 373–408.
- Ponzio, Augusto 2009. Semiotics after Sebeok. In: Deely, John; Sbrocchi, Leonard G. (eds.), *Semiotics 2008: Specialization, Semiosis, Semiotics*. (Proceedings of the 33rd Annual Meeting of the Semiotic Society of America 16-19 October 2008.) Ottawa: Legas, 3–23.
- Sebeok, Thomas A. 1979. *The Sign & Its Masters*. Austin: The University of Texas Press. [2nd ed. 1989. Lanham: University Press of America.]
- Sebeok, Thomas A. 2001a. *Global Semiotics*. Bloomington: Indiana University Press.

- Sebeok, Thomas A. 2001b. Biosemiotics: Its roots, proliferation, and prospects. *Semiotica* 134(1/4): 61-78. [Also in Sebeok 2001a. 31-43.]
- Sebeok, Thomas A. 2010. Biosemiotics. In: Cobley, Paul (ed.), *The Routledge Companion to Semiotics*. London: Routledge, 179-181.



## **Don Favareau and the road to biosemiotic transdisciplinarity**

**Søren Brier**

Copenhagen Business School, Denmark

Don Favareau has been a dynamic contributor to the development of biosemiotics its organization, not only with his seminal book: *Essential Readings in Biosemiotic: Anthology and Commentary* from 2010, where he edited all his colleagues' writings creating the history of biosemiotics. He has assumed the role of the modest and benevolent interdisciplinary integrator through his pervasive kindness and openness to all serious initiatives. Always he is considering where a specific contribution could fit in to the overall development of biosemiotics and pondering how a change in the foundation of science should be made in order for such an inter- and transdisciplinary endeavour as biosemiotics to succeed. Finally he is a supreme speaker and communicator, with an ability to illustrate and popularize biosemiotics for a broader audience that not many others in the association can claim to have.

The question of the philosophical foundations for the kind of transdisciplinary biosemiotics Don Favareau has attempted to facilitate, is something I have grappled with for some time. Both the scientific materialistic theory of the creation of the universe in the form of a Big Bang, where sentient beings emerge through the self-organization of matter, is unsatisfactory. So, too, is the philosophy of pansemiotics, where the world ontologically independent in itself is intrinsically semiotic from the start. The first is unsatisfactory because it seems inadequate to explain how sentient beings emerge through evolution, as Thomas Nagel has argued in his book, *Mind and Cosmos* (2012). Pansemiotics, on the other hand, reifies semiosis and signs as

a sort of independent reality, in the same way as the materialistic worldview reifies energy and matter and the informational view reifies information as an ontologically basic and independent process or entity. None of these solutions seems to be able to give a full explanation to our own place in their worldviews as the sentient beings with a linguistically- and culturally-based self-consciousness. That is, how we – as purely material beings – are able, through meaningful communication and cooperation, to produce the kind of fallible but public, open and well-tested knowledge we call science, is not wisely explained. So far, it does not seem possible that such can arise from the material worldview produced by science. This would entail incorporating outer nature and all animal bodies, including our own, to a theory of how experience and our own linguistically based self-consciousness and its ability to learn by mistakes has come into existence. The new transdisciplinary paradigm of info-computationalism, however, claims to be able to solve these problems. The limits of this attempt point to where the use of Peirce's philosophy and semiotics in relation to living systems can help us solve some of these problems.

### **The relation between the conceptualization of the computational sciences and the concept of information**

The issue of the relation between the conceptualization of the computational sciences and the concept of information is a very deep one. It can be painted on the border between the engineering view of the utility of mechanical calculation and the human capacity to create contexts.

The problem that arises betwixt the construction of so-called "artificial intelligence" and attempts to unravel the mechanism of biological computational, is essentially one involving a search for meaning among signs with inherently different referential bases. At least it is so if one thinks that there are qualitative differences between the experimental aspects of life and computations without experiences. Thus, I am sceptical about the possibility of finding "a new science of information" in the application of computational technologies, whatever sort of category the engineers may wish to call such methods.

All the ontological attempts to create objective concepts of information result in concepts that cannot encompass meaning and the experience of embodied living and social systems. There is no

conclusive evidence that the core of reality across nature, culture, life and mind is purely either mathematical, logical or of a computational nature. Therefore the core of the information concept should not be based only on pure logical or mathematical rationality. To follow the transdisciplinary ambition in much information science and philosophy, we need to include a phenomenological and hermeneutical ground in order to encompass a theory of interpretative meaning and signification. This is also true if we start in cybernetics and system theory, both of which have transdisciplinary aspirations: for instance, in Bateson's ecological concept of information as "a difference that makes a difference" and in Luhmann's triple autopoietic communication-based system theory. Charles Sanders Peirce's pragmatist semiotics, on the other hand, integrates logic and information in interpretative semiotics. I therefore suggest alternatively building information theories on semiotics, from the basic relations of embodied living systems, meaningful cognition and communication. I agree with Peircean biosemiotics that all information must be part of real relational sign-processes manifesting as tokens. In contrast to standard information theory, Peirce's theory of information is built on meaningful signs. He connects information to the growth of symbols, with a theory empirically based in a transdisciplinary realistic worldview, developed later in modern biosemiotics to include all living systems.

One of the main deep problems in defining a universal information concept is that all the ontological attempts to create objective concepts of information - such as Claude Shannon's (Shannon, Weaver 1963[1948]), Norbert Wiener's (Wiener 1965[1948]) cybernetic and John Archibald Wheeler's "it from bit" (Wheeler 1994) - results in concepts that cannot encompass the meaning and experience of embodied living and social systems. When scientific methods are applied to information, cognition, and communication, we are only left with codes, grammar, phonetics, programs, formal language, copy machines and adaptors - the analysis of meaningful relations is lost amidst all the formal technicalities. As Keeler (1995: 9) writes:

From any (necessarily limited) human point of view, the meaning of any expression cannot be simply a matter of probability (established conventional response) or actuality (conditionally stimulated response) but must include possibility (an individual's unique experience in which the interpretation of meaning occurs) that cannot help but generate new meaning - growing experience. The

essential continuity of experience, in which meaning is always a possibility in the future, is theoretically fundamental to Peirce's pragmatism (pragmaticism) – a point ignored by his contemporary, as well as by the modern, “pragmatists”.

Probability – statistically based on a fixed set of outcomes – is not possibility. As Peirce writes: “[...] to assert that any source of information that is restricted to actual facts could afford us a necessary knowledge, that is, knowledge relating to a whole general range of possibility, would be a flat contradiction in terms” (Peirce CP 4.232)<sup>14</sup>. The meaning of any expression goes beyond probability, as an individual's unique experience from which the interpretation of meaning occurs cannot avoid generating new meaning, since meaning is always connected to the possibility of acting in the future. Put another way, meaning is the possible types of action a message can produce in the future. This theoretical understanding is fundamental to Peirce's pragmaticism (Keeler 1995).

Meaning is constructed by the receiver from the information gathered by the interpretation of signs, including hypotheses of the sign producer within those frames that reality imposes on us for survival and procreation. This is an important foundation for Peirce's view of information (CP 4.65):

[...] I use the word *information* to mean a state of knowledge, which may range from total ignorance of everything except the meanings of words up to omniscience; and by *informational* I mean relative to such a state of knowledge. Thus, by “informationally possible”, I mean possible so far as we, or the persons considered, know. Then, the *informationally possible* is that which in a given information is not perfectly known not to be true. The *informationally necessary* is that which is perfectly known to be true. The *informationally contingent*, which in the given information remains uncertain, that is, at once possible and unnecessary.

The statistical conceptualization of Shannon's (Shannon, Weaver 1963) and especially Wiener's (Wiener 1965) mathematical definitions of information related to the concepts of neg-entropy cannot

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<sup>14</sup> I uphold the tradition of referring to Peirce's work with the following abbreviations: CP for Collected Papers (see Peirce, C. S. [1931–58]. *Collected Papers*.); EP for *Essential Peirce* (Houser, Nathan; Kloesel Christian, eds.) (1992); MS for unpublished manuscripts that are now often published on websites like for instance Arisbe. MS for unpublished Manuscripts kept in the Houghton Library at Harvard numbers from Richard R. Robin's catalogue.



adequately encompass the experiential embodied pragmatic semantic meaningful content of the customary sign games of living systems and the language games of embodied conscious humans. I have (Brier 1992; 2008) criticized the information-processing paradigm and second-order cybernetics, including Niklas Luhmann's communication theory (Luhmann 1995), for not being able to produce a foundational theory of signification and meaning, because they lack a phenomenological first person view (see also Harney 2015). This was not Shannon's intention, though, despite his work being used that way by others.

I do not find the evidence that the core of reality across nature, culture, life and mind can be proven to be of a purely mathematical, logical or computational nature very convincing. Furthermore, it was never Shannon's intention to venture further than the statistical-probabilistic technical aspect of human communication and he underlined that there was no concept of meaning connected to his theory, as meaning is attached to future possibilities. The development of a computer semiotics therefore seems necessary (Andersen 1997; Brier 2014b). Peirce writes (MS 291):

No present actual thought (which is mere feeling) has any meaning, any intellectual value; for this lies, not in what is actually thought, but in what this thought may be connected with in representation by subsequent thoughts; so that the meaning of a thought is altogether something virtual.

It is the work of Wiener and Schrödinger that makes the connection between the mathematical and the physical concepts of communication and, further on, to living systems. Norbert Wiener (1965) pointed out that information is information, neither matter nor energy. His theory of cybernetics connects statistical information with thermodynamic entropy and information becomes negentropy (also used by Schrödinger 1944). Information as negentropy in the self-organizing systemic complexity paradigm becomes the organizing and sometimes creative aspect of nature. Gregory Bateson (1972; 1979) developed a non-technical and more wide-ranging concept of cybernetic information in a cognitive and an ecological direction based on Wiener's cybernetic view of information as negentropy (Hoffmeyer 2008b). He defined information as "a difference that makes a difference" for a cybernetic mind. The strength in Bateson's work was that he developed a non-technical link of information and meaning in an ecological cybernetic mind-framework, including the

whole biosphere, as well as culture and social systems (Brier 1992). Through a functionalist concept of the cybernetic mind, Bateson further developed the idea of the biosphere as the ultimate cybernetic mind, thus finding “the pattern that connects” (Bateson, Bateson 1987; Brier 2008b).

The dominating transdisciplinary theory of signification and communication in nature, humans, machines, and animals, is the information-processing paradigm of cognitive science (Gardner 1985) used in computer informatics and psychology (Lindsay, Norman 1977; Fodor 2000) and in library and information science (Vickery, Vickery 2004). It is also found integrated with systems theory and cybernetics as well as a general renewal of the materialistic evolutionary worldview (e.g., Stonier 1990; 1992; 1997) and as a pan-informational and pan-computational paradigm for all processes in nature, culture, society and technology (see the papers in Dodig Crnkovic 2010; Davies, Gregersen 2010).

Concurring with Thomas Nagel (2013), if we start in mathematics and physics in the form of the present idea of objective conception of information bits and thermodynamically defined energy we will find ourselves in a *cul-de-sac*. On such a basis, I see no way of developing a theory which can encompass the living, experiencing body and its consciousness’ integration with communicational networks such as natural and artificial languages in humans (Brier 2010). Therefore I find it unavoidable that we must start in a way that includes the “experiential life world” of, for example, Husserl and Merleau-Ponty. Peirce attempts to broaden the view by working towards showing the idea that logic is semiotic – meaning that formal logic is only one aspect of logic: “Logic, for me, is the study of the essential conditions to which signs must conform in order to function as such” (Peirce MS 291). On information, Peirce wrote that “in metaphysics, information is the connection of form and matter” (CP 2.419 footnote) but also added: “When the information contained in a proposition is not of the nature of an equation, why should we, by circumlocutions, insist upon expressing it in the form of an equation?” Peirce was a realist and a fierce critic of any form of non-realism, which he called nominalism and which would be equivalent to various modern forms of constructivism. As Searle (1994: 559) writes:

In general, Peirce took the view that “nominalism” involves a metaphysical reduction of modes of reality to the existence of individual entities (CP 1.21), thereby hopelessly obscuring the

dependence of thought and inquiry on diverse forms of representation and so ensuring in all intellectual pursuits, but especially in experimental science, a chronic state of crisis or confusion over the status of truth claims, as well as the proliferation of destructive and not merely critical forms of skepticism.

Peirce showed that the starting point for the concept of information should not only be classical mathematics and logics but had to also be phenomenological (Ransdell 1989); meaning that it also has a point of departure in experiential consciousness. Still, such a predicate should stay within a realistic – but not mechanistic – worldview connected to an empiricist and fallibilist view of knowledge as Popper would later (1959) state. This way, it would connect the results of research in the natural and technical sciences within the information area. Thus, though Peirce was one of the earliest in modernity to think of mechanizing logic in a machine, he had a clear view of the limits of what we, today, after Turing, would call AI (artificial intelligence):

What, then, is the use of designating some formulations of opinion as rational, while others (perhaps leading to the same results) are stigmatized as blind followings of the rule of thumb or of authority, or as mere guesses? When we reason we set out from an assumed representation of the state of things. This we call our premise; and working upon this, we produce another representation which professes to refer to the same state of things; and this we call our conclusion. [...] The irrationality here consists in our following a fixed method [an algorithm], of the correctness of which the method itself affords no assurance; so that if it does not happen to be right in its application to the case in hand, we go hopelessly astray. In genuine reasoning, we are not wedded to our method. We deliberately approve it, but we stand ever ready and disposed to reexamine it and so improve upon it, and to criticize our criticism of it, without cessation. Thus the utility of the word “reasoning” lies in its helping us to discriminate between self-critical and uncritical formations of representations. If a machine works according to a fixed principle involved in the plan of it, it may be a useful aid in reasoning; but unless it is so contrived that, were there any defect in it, it would improve itself in that respect, then, although it could correctly work out every possible conclusion from premises, the machine itself would afford no assurance that its conclusions would be correct. Such assurance could only come from our critical examination of it. Consequently, it would not be, strictly speaking, a reasoning-machine. (Peirce MS 831)

Some would then assume Peirce to be a humanistic constructivist; but that is surprisingly far from reality as he was educated as a chemist and for many years did experimental work on methods in physics for the US Coastal Services and furthermore participated in the development of modern logic. Thus his view of research is very much informed by an empirical, logical and mathematical grounding, while his semiotic philosophy produces a worldview a bit different from the received view of science. In the latter, he includes a phenomenological view in his empiricism, inasmuch as the experienced world is considered to be as real and important as the outer material:

[...] all knowledge comes to us by observation, part of it forced upon us from without from Nature's mind and part coming from the depths of that inward aspect of mind, which we egotistically call *ours*; though in truth it is we who float upon its surface and belong to it more than it belongs to us. Nor can we affirm that the inwardly seen mind is altogether independent of the outward mind which is its Creator. (Peirce, CP 7.558)

Thus, for Peirce, formal logic is only one aspect of human rationality and information is only one aspect of the cognition and communication of all living systems. The main vehicle for these processes is in his triadic semiosis, where a representamen (possible sign) relates to an interpretant on one side and an object on the other. We do not see facts or data or bits of reality, but signs:

I will say that a sign is anything, of whatsoever mode of being, which mediates between an object and an interpretant; since it is both determined by the object *relatively to the interpretant*, and determines the interpretant *in reference to the object*, in such wise as to cause the interpretant to be determined by the object through the mediation of this 'sign'. (Peirce, EP 2:410)

The consequence of Peirce's pragmaticist logic-as-semiotics is that meaning cannot be determined in a binary relation (Apel 1981). For Peirce, a sign is – in contrast to a bit of objective information – something by knowing which we know something more. Its aspect of 'would-bes' is connected to the future social acts it could set in motion. In the latest development of his theory Peirce (CP 5.438) states:

Pragmaticism was originally enounced in the form of a maxim, as follows: Consider what effects that might conceivably have practical bearings you conceive the objects of your conception to have. Then,

your conception of those effects is the whole of your conception of the object.

I will restate this in other words [...]: The entire intellectual purport of any symbol consists in the total of all general modes of rational conduct which, conditionally upon all the possible different circumstances and desires, would ensue upon the acceptance of the symbol.

Peirce's ontology is a process view. This is an alternative to the mechanistic material view where reality is controlled by universal laws and run by energy. Ilya Prigogine (1980; 1996; Prigogine, Stengers 1984) also developed an idea of self-organization through his theory of dissipative structures.

In developed forms of general system theory the organizing power of negentropy is combined with the principle of emergence and is used to explain how life and consciousness arose from matter through self-organization for instance in Jantsch's famous book on *The Self-organizing Universe* (1980). For Peirce the laws unfold with the development of the universe. Recently, physicist Lee Smolin (2014) also argued against the idea of transcendental universal law as the eternal foundation for the emergence of the universe. Instead, he promotes a process view encompassing the idea that laws develop with the unfolding of the universe and manifest themselves on different levels. This corresponds quite closely to Prigogine's (*op cit*) view. In modern science, we have thus moved from a mechanical idea of the *Cosmos* to a system-theoretical self-organized evolutionary super-system: a *Cybos*.

Through the combination of thermodynamics and the info-computational paradigm attempts to naturalize information computations, we have moved to conceptualize the universe as an *Infos* as imagined by Chaitin (2006; 2007) and Wheeler (1994). Now, through Peirce, we have started to move towards a *Semios* – that is, encompassing and integrating the former understandings of matter and information in his transdisciplinary triadic semiotics. Peirce writes on why his logic is not only based on language analysis:

Logic, for me, is the study of the essential conditions to which signs must conform in order to function as such. How the constitution of the human mind may compel men to think is not the question; and the appeal to language appears to me no better than an unsatisfactory ascertaining of psychological facts that are of no relevancy to logic. But if such appeal is to be made, (and logicians generally do make it; in particular their doctrine of the copula

appears to rest solely upon this,) it would seem that they ought to survey human languages generally and not confine themselves to the small and extremely peculiar group of Aryan speech. (Peirce, MS 291)

It is this integration between the self-organizing idea of cybernetics or system science and Peirce's semiotic phenomenologically-based process view that I call 'cybersemiotics' (Brier 2006; 2011). Cybersemiotics holds that it is within that wider reality of life connecting embodied subjects in language and social actions to nature and technology that information is created (Brier 2010). Information is not a thing but an aspect in a semiotic relational form of logic, manifesting as replicas or tokens. Peirce writes (MS 517):

Look down a printed page, and every *the* you see is the same word, every *e* the same letter. A real thing does not so exist in replica (and metaphysics must account for such existence). The being of a sign is merely being represented.

Thus, in the cybersemiotic transdisciplinary frame for interdisciplinarity the sign process is viewed as transcending the division between nature and culture, between the natural sciences, the life sciences, the social sciences, and the humanities and between phenomena that are exterior and those that are interior to human consciousness.

Now we cannot postpone the point that Peirce's concept of the triadic sign arises from his deep reorganization of the philosophical outlook on reality – a metaphysics, the basis of which is ontology, epistemology and axiology. His metaphysics emerges as a revision of the work Aristotle, Hegel and Kant did in determining the basic categories, as well as the dynamics necessary for a theory of how it is possible for the process of knowing to exist at all in generating real true knowledge. Peirce overturns the dualist bearing of Descartes' foundation of science and Saussure's foundation of semiotics, both of which are cognate with the dominant scientific and technical understanding of information in most computer and cognitive science. The breakthrough of this new triadic category theory emerges in the paper "On a New List of Categories" from 1867 (Peirce, CP 1.545–567). It is the product of a long development (Esposito 1980), and it the product of his lifelong reading of Kant, Hegel and Aristotle, who are the philosophers most renowned for their work with the basic categories of ontology and epistemology.

Where Aristotle's Categories, first of all, elaborate the conception of substance as the bearer of quality, quantity, relation, position, possession, action, or affection, Kant's categories present understanding in the pure *a priori* concepts intrinsic to the faculty of understanding itself. Hegel's triad of thesis, antithesis, and synthesis is focused on the dynamics of knowing and the evolution of collective knowledge. Peirce, by contrast, focuses on the concept of the sign and, in fact, semiotics as the carrier of the whole process of knowing is an idea inspired by Kant's insistence on conception as the reduction of the manifold of sensuous impressions to a unity. For Peirce such unity is not achieved by a transcendental deduction, but through the pure act of attention. The object is all that can be reduced to the unity of a proposition. This is why Peirce starts phenomenologically with the most universal conception of the present (Harney 2015). He called his triadic view 'phaneroscopy'. Consciousness is - as also Husserl points out - always aware of something, an "object", which is the concept of "substance" in Peirce's semiotic pragmatism.

Thus the object is not only the material thing; it can also be a mythological beast like the devil, as long as it has an inferential social impact on human actions - which one has to admit that the concept of devil has had for many hundreds of years. Thus, the object can be very real socio-communicatively. It is the objects of thought and communication in Peirce's philosophy that are central for the logical (and grammatical) function of the copula, be it an actual or a 'would-be'. If we say the knife is sharp, it means both now (an actual), but also in the next hour or day, what he called 'would-bes' (Searle 1994: 561-562). Keeler (1995) writes of the importance of the dynamics or process view of information contained in semiotics:

From the semiotic perspective, the continuity of experience that supports the growth of knowledge depends on our collective capability to examine the validity (logical necessity) of related ideas (as concepts of what is possibly true) while increasing the reliability of their reference to the experienced world (as representations of what is probably true). We can know to the extent that we can learn to represent what we observe, [...] as interpretations that can always be examined for their validity (internal coherence) and their reliability (referential accuracy) so that we can continue to reconcile many observations, through time - by the most efficient media we can develop for that purpose (Keeler 1995: 12).

What appears with Peirce's triadic semiotics is, then, a new original synthesis of the works of Aristotle, Kant and Hegel; and this leads to

a new conception of information. Peirce's conception is a relative measure of the possible information in a term/ word/ concept/ sign in a communication between two minds. He suggests measuring the amount of information, not in bits, but in terms of breadth and depth:

By the informed breadth of a term, I shall mean all the real things of which it is predicable, with logical truth on the whole in a supposed state of information. By the phrase "on the whole" I mean to indicate that all the information at hand must be taken into account, and that those things only of which there is on the whole reason to believe that a term is truly predicable are to be reckoned as part of its breadth. [...]

By the informed depth of a term, I mean all the real characters (in contradistinction to mere names) which can be predicated of it (with logical truth, on the whole) in a supposed state of information [...]. The depth, like the breadth, may be certain or doubtful, actual or potential, and there is a comprehensive distinctness corresponding to extensive distinctness.

The informed breadth and depth suppose a state of information which lies somewhere between two imaginary extremes. These are, first, the state in which no fact would be known, but only the meaning of terms; and, second, the state in which the information would amount to an absolute intuition of all there is, so that the things we should know would be the very substances themselves, and the qualities we should know would be the very concrete forms themselves. This suggests two other sorts of breadth and depth corresponding to these two states of information, and which I shall term respectively the essential and the substantial breadth and depth.

By the essential depth of a term, then, I mean the really conceivable qualities predicated of it in its definition. (Peirce, CP 2.407-2.410)

Thus information is a function of the knowledge of the sender, as well as the receiver, plus the process of conceptualization put into the concept or sign used as vehicle. The sign is again a practical product of the development of culture and society. A hundred years ago, the concept of qubit would not be able contain any information in a communication because the concept was not experimentally and theoretical-socially accepted as having any bearing on reality. Peirce develops his information model a little further down the page (Peirce, CP 2.419):

By breadth and depth, without an adjective, I shall hereafter mean the informed breadth and depth.



It is plain that the breadth and depth of a symbol, so far as they are not essential, measure the information concerning it, that is, the synthetical propositions of which it is subject or predicate. This follows directly from the definitions of breadth, depth, and information. Hence it follows:

First, That, as long as the information remains constant, the greater the breadth, the less the depth;

Second, That every increase of information is accompanied by an increase in depth or breadth, independent of the other quantity;

Third, That, when there is no information, there is either no depth or no breadth, and conversely.

These are the true and obvious relations of breadth and depth. They will be naturally suggested if we term the information the area, and write -

Breadth x Depth = Area.

Thus Peirce produces a new transdisciplinary theory of information connected to his semiotic theory of cognition and communication covering all living systems in an anticipation of biosemiotics (Favareau 2010; Hoffmeyer 1996; 1998; 2008a) which differs substantially from the usual conceptions (Nöth 2012).

Peirce's theory combines the concepts of meaning and information within a framework of pragmatic realism established on a semiotic understanding of cognition and communication. In this way, he builds bridges between the four different and often incommensurable worlds of physical, biological, social and human sciences (Brier 2015). Peirce's theory can be modernized by combining it with Luhmann's communicative systems theory, which introduces autopoiesis at the level of biology, psychology, and social communication (Brier 2008a; 2013a, 2013b, 2014a), particularly as Luhmann and Peirce share the idea of form as the essential component in communication. Peirce writes (MS 793:1-3):

[...] a Sign may be defined as a Medium for the communication of a Form. [...]. As a medium, the Sign is essentially in a triadic relation, to its Object which determines it, and to its interpretant which it determines. [...]. That which is communicated from the Object through the Sign to the Interpretant is a Form; that is to say, it is nothing like an existent, but is a power, is the fact that something would happen under certain conditions.

In Peirce's dynamic process semiotics, a form is something that is embodied in an object as a habit. Thus, form acts as a constraining factor on interpretative behavior or what he calls a real possibility in

the form of a 'would-be'. Thus the form is embodied in the object as a sort of disposition to act. The dynamics of information are such as to carry forms from sign producer to sign interpreter in a social metaphysics-producing environment, thereby defining the frames of meaning.

## Conclusion

When scientific methods based on dualism are applied to information, cognition, and communication, we can only analyze codes, grammar, phonetics, programs, formal language, copy machines and adaptors. The analysis of meaningful relations is lost amidst all the formal technicalities and thereby an essential part of all living systems' perception, learning and communication is overlooked. Peirce's, semiotics allows us to theoretically distinguish between the information the sender might have imputed to the sign, the (possible) information in the sign itself and the information the interpreter gets out of the sign, contrary to the idea that the information is the same in all three. The knowledge in the sign must be interpreted in order for a full semiosis to happen and for the receiver to acquire the information imparted by his or her interlocutor. As Peirce writes, signs have the "active power to establish connections between different objects, especially between objects in different Universes" (Peirce, CP 6.455; 1908).

We must accept that objects of experience and meaning are just as real as objects of matter when we deal with living systems, as well as in their relations to computers and algorithmic computation. This does not mean that what physicists call the "world" or "reality" as such is imbued with meaning as it is understood in the human social world. It means that the concept of "world" and "reality" produced by the present understanding of physics is unable to reflexively encompass the embodied psychological and social foundation of knowledge. Thus the physicists' idea of reality does not take our full measure of humans as conscious, linguistic and social creatures. It lacks the embodied phenomenological foundation of living systems in the understanding of information as part of a transdisciplinary *Wissenschaft*.

I suggest that we, like Peirce, take as our point of departure our consciousness' ability to harbour fallible sense experiences through abductive creation of signs. Peirce says that all experience, thinking and memory plus planning of actions and all communication is based

on semiosis and this means we live in an umwelt, or what I call a signification sphere, and which Deely (2009) calls *purely objective reality*. The main task of the natural sciences has been to find out, which part of this purely objective reality, consisting of signs, is actually composed of things. So it has created a worldview of things (atoms and elementary particles), which we can use to understand our own “thing-aspect”, but not our semiotic aspect! Thus science only describes a part of human reality as neatly delimited by the logical positivist. All the phenomena that really matters really to us, such as emotions, meaning and truth, are not part of this world view.

I think the major problem is that we insist in explaining ourselves and our consciousness and concepts of meaning from the standpoint of this reified material world, which we know is only a part of the full reality. As Peirce points out, through his philosophy of synechism there must be an inner connection between mind and matter for us to get deeply into our description of matter, energy and objective information. Thus, when we start sorting out what is not only signs but also things, we find they are part of a continuum. This means that both are never completely independent of the basis of our consciousness or what Peirce calls mind or the semiotic process. Insisting on this connection is what I interpret Peirce as meaning by ‘hylozoism’. Thus both synechism and hylozoism are what we call onto-epistemologies and should not be reified as pure ontologies. This also means that the “scientific world view” in its materiality is a mental construction – but a well-tested one also in practice. It is the result of an ongoing ‘modeling’, developing all the time, with the goal of producing a final truth, as Peirce argues.

With Peirce, I start phenomenological or phaneroscopic work with our own semiotic construction of an umwelt/signification sphere/pure objective reality. Working in critical rational and practical empirical with our experiences, we slowly model a part of the world as material and existing partly independent of us (the world of signs that are things). Now, the mistake is to try to explain our own total being from our model of the material world. It is clear that aspects of our being have material aspects, but we are clearly more than a self-organized collection of atoms. I also think it is a mistake to try to transfer missing aspects such as meaning, purpose, emotion and will to scientific modeling and, as such, the model of the world. In saying that, I am giving philosophical arguments for not believing that the scientific model of the world and us and our language and culture will cover the whole of reality. Here, I do think that phenomenological and hermeneutical descriptions of experiences,

emotions, willing, value and meaning can add aspects to or rather supplement the scientific model. The question I am not sure about is if it is possible for us to integrate them in a consistent way. Peirce worked especially with the integration of a general scientific and a general religious worldview through his reflection on the role of a conscious effort to develop a metaphysics encompassing both. I think there is a reason that in this scientific time we still cherish various sorts of political ideologies, existential philosophies and spiritual and religious teaching/ doctrines.

## References

- Andersen, Peter Bøgh 1997. *A Theory of Computer Semiotics: Semiotic Approaches to Construction and Assessment of Computer Systems*. Cambridge: Cambridge University Press.
- Apel, Karl-Otto 1981. *Charles S. Peirce: From Pragmatism to Pragmaticism*. (Krois, John Michael, trans.) Amherst: University of Massachusetts Press.
- Bateson, Gregory 1972. *Steps to an Ecology of Mind: Collected Essays in Anthropology, Psychiatry, Evolution and Epistemology*. St. Albans: Paladin
- Bateson, Gregory 1979. *Mind and Nature: A Necessary Unity*. (Advances in Systems Theory, Complexity, and the Human Sciences.) New York: Hampton Press.
- Bateson, Gregory; Bateson, Mary Catherine 1987. *Angels Fear: Towards and Epistemology of the Sacred*. Toronto: Bantam Books.
- Brier, Søren 1992. Information and consciousness: A critique of the mechanistic foundation of the concept of information. *Cybernetics & Human Knowing* 1(2/3): 71-94.
- Brier, Søren 2008a. *Cybersemiotics: Why information is not enough*. Toronto: Toronto University Press.
- Brier, Søren 2008b. Bateson and Peirce on the pattern that connects and the sacred. In: Hoffmeyer, Jesper (ed.), *A Legacy for Living Systems: Gregory Bateson as Precursor to Biosemiotics*. (Biosemiotics 2.) Dordrecht: Springer, 229-255.
- Brier, Søren 2010. Cybersemiotics: An evolutionary world view going beyond entropy and information into the question of meaning. *Entropy* 12(8): 1902-1920.
- Brier, Søren 2011. Cybersemiotics and the question of knowledge. In: Dodig Crnkovic, Gordana; Burgin, Mark (eds.), *Information and Computation*. Singapore: World Scientific Publishing Co., 11-47.
- Brier, Søren 2013a. Cybersemiotics: A new foundation for transdisciplinary theory of consciousness, cognition, meaning and communication. In: Swan, Liz (ed.), *Origins of Mind*. (Biosemiotics 8.) New York: Springer.

- Brier, Søren 2013b. Cybersemiotics: A new foundation for transdisciplinary theory of information, cognition, meaningful communication and the interaction between nature and culture. *Integral Review: A Transdisciplinary and Transcultural Journal* 9(2): 220–263.
- Brier, Søren 2014a. The transdisciplinary view of information theory from a cybersemiotics perspective. In: Ibekwe-SanJuan, Fidelia; Dousa, Thomas M. (eds.), *Theories of Information, Communication and Knowledge: A Multidisciplinary Approach*. Dordrecht: Springer, 23–49.
- Brier, Søren 2014b. Nature and machine. In: Holbrook, J. Britt; Mitcham, Carl (eds.), *Ethics, Science, Technology, and Engineering: A Global Resource*. 2nd. ed. Vol. 4. Farmington Hills: Gale Cengage Learning, 127–130.
- Brier, Søren 2015. Finding an information concept suited for a universal theory of information. *Progress in Biophysics and Molecular Biology* 119(3): 622–633.
- Chaitin, Gregory 2006. Epistemology as information theory: from Leibniz to  $\Omega$ . *Collapse* 1: 27–51.
- Chaitin, Gregory 2007. Epistemology as information theory: from Leibniz to  $\Omega$ . In: Dodig Crnkovic, Gordana; Stuart, Susan Alice Jane (eds.), *Computation, Information, Cognition: The Nexus and The Liminal*. Cambridge: Cambridge Scholars Publishing, 2–18.
- Davies, Paul; Gregersen, Niels Henrik (eds.) 2010. *Information and the Nature of Reality: From Physics to Metaphysics*. Cambridge: Cambridge University Press.
- Dodig Crnkovic, Gordana 2010. The cybersemiotics and info-computationalist research programmes as platforms for knowledge production in organisms and machines. *Entropy* 12: 878–901.
- Esposito, Joseph L. 1980. *Evolutionary Metaphysics: The Development of Peirce's Theory of Categories*. Athens: Ohio University Press.
- Favareau, Donald (ed.) 2010e. *Essential Readings in Biosemiotics: Anthology and Commentary*. (Biosemiotics 3.) Dordrecht: Springer.
- Fodor, Jerry 2000. *The Mind Doesn't Work That Way: The Scope and Limits of Computational Psychology*. Cambridge: The MIT Press.
- Gardner, Howard E. 1985. *The Mind's New Science: A History of the Cognitive Revolution*. New York: Basic Books.
- Harney, Maurita 2015. Naturalizing phenomenology – a philosophical imperative. *Progress in Biophysics and Molecular Biology* 119(3): 661–669.
- Hoffmeyer, Jesper 1996. *Signs of Meaning in the Universe*. (Haveland, Barbara J., trans.) Bloomington: Indiana University Press.
- Hoffmeyer, Jesper 2008a. *Biosemiotics: An Examination into the Signs of Life and the Life of Signs*. Scranton: University of Scranton Press.
- Hoffmeyer, Jesper (ed.) 2008b. *A Legacy for Living Systems: Gregory Bateson as Precursor to Biosemiotics*. (Biosemiotics 2.) Dordrecht: Springer.
- Jantsch, Erich 1980. *The Self-Organizing Universe: Scientific and Human Implications of the Emerging Paradigm of Evolution*. New York: Pergamon Press.
- Keeler, Mary 1995. The philosophical context of Peirce's existential graphs. In: *Third International Conference on Conceptual Structures: Applications,*

- Implementation and Theory: Proceedings. Supplement.* University of California Santa Cruz, 94–107.
- Lindsay, Peter H.; Norman, Donald A. 1977. *Human Information Processing: An Introduction to Psychology*. 2nd ed. New York: Academic Press.
- Luhmann, Niklas 1995. *Social Systems*. Stanford: Stanford University Press.
- Nagel, Thomas 2012. *Mind and Cosmos: Why the Materialist Neo-Darwinian Conception of Nature is Almost Certainly False*. Oxford: Oxford University Press.
- Nöth, Winfried 2012. Charles S. Peirce's theory of information: A theory of the growth of symbols and of knowledge. *Cybernetics and Human Knowing* 19(1/2): 137–161.
- Peirce, Charles S. 1994. (CP) *The Collected Papers of Charles Sanders Peirce*. (CD version, Deely, John, ed., reproducing Vols. I–VI, Hartshorne, Charles; Weiss, Paul, eds. Cambridge: Harvard University Press, 1931–1935; vols. VII–VIII, Burks, Arthur W., ed. Cambridge: Harvard University Press, 1958, Charlottesville, Intalex.
- Peirce, Charles S. 1998. (ES2). *The Essential Peirce: Selected philosophical writings*. Vol. 2. (Houser, Nathan; Kloesel, Christian, eds.)
- Popper, Karl R. 1959. *The Logic of Scientific Discovery*. London: Routledge.
- Prigogine, Ilya 1980. *From Being to Becoming*. San Francisco: W.H. Freeman.
- Prigogine, Ilya 1996. *The End of Certainty: Time, Chaos, and the New Laws of Nature*. New York: The Free Press.
- Prigogine, Ilya; Stengers, Isabelle 1984. *Order Out of Chaos: Man's New Dialogue with Nature*. New York: Bantam Books.
- Ransdell, Joseph 1989. Peirce est-il un phénoménologue? *Études Phénoménologiques* 5(9/10): 51–75.<sup>15</sup>
- Schrödinger, Erwin 1996 [1948]. *Nature and the Greeks, and, Science and Humanism*. (Shearman lectures, delivered at University College, London.) (Canto Classics.) Cambridge: Cambridge University Press.
- Schrödinger, Erwin 2012 [1944]. *What is Life?: With Mind and Matter and Autobiographical Sketches*. (Canto Classics.) Cambridge: Cambridge University Press.
- Searle, Leroy F. 1994. Peirce, Charles Sanders. In: Groden, Michael; Kreiswirth, Martin (eds.), *The Johns Hopkins Guide to Literary Theory and Criticism*. Baltimore: Johns Hopkins University Press, 558–562.
- Shannon, Claude 1949. A mathematical theory of communication. In: Shannon, Claude; Weaver, Warren, *The Mathematical Theory of Communication*. Urbana: University of Illinois Press, 29–125.
- Smolin, Lee 2014. *Time Reborn: From the Crisis in Physics to the Future of the Universe*. London: Allan Lane.
- Stonier, Tom 1990. *Information and the Internal Structure of the Universe: An Exploration into Information Physics*. London: Springer-Verlag.

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<sup>15</sup> Unpublished original English version retrieved May 20, 2016 from: <http://www.cspeirce.com/menu/library/aboutcsp/ransdell/phenom.htm>.

- Stonier, Tom 1992. *Beyond Information: The Natural History of Intelligence*. London: Springer-Verlag.
- Stonier, Tom 1997. *Information and Meaning: An Evolutionary Perspective*. London: Springer-Verlag.
- Vickery, Brian C.; Vickery, Alina 2004. *Information Science in Theory and Practice*. 3rd ed. Munich: Saur.
- Wheeler, John Archibald 1994. *At Home in the Universe*. New York: American Institute of Physics.
- Wiener, Norbert 1965 [1948]. *Cybernetics: Or, Control and Communication in the Animal and the Machine*. Cambridge: The MIT Press.





## **Meronomy of the living semiotic means**

***Sergey Chebanov***

Saint Petersburg State University, Russia

One of the most important conclusions resulting from the semiotic awareness of biology, to which Donald Favareau came from linguistics, is Thomas A. Sebeok's dictum that "life and sign processes are coextensive" (Kull, Emmeche, Favareau 2008: 43). In my opinion, this thesis can be formulated more definitively: the living being is the sign in which the body of the *expression plane* is the organism studied by traditional biology and the *content plane* is the biological semantics that consists in how such an organism provides the possibility of manifesting life as a chronic miracle of a violation of regularities (Chebanov 1993; 2002).

In this regard, before biosemiotics (as well as before semiotics in general), the question arises of describing the structure of the semiotic means. This structure can be studied on at least two levels: on the level of describing the structure of the specific semiotic means (the "anatomy" of semiotic means using Goethe's distinction of anatomy and morphology – Opitz 2004) and on the level of describing the universal relationships of the whole and parts ("morphology" – in Goethe's sense – of semiotic means).

Such universal relation of the whole and the parts is the subject of the study of mereology in Western understanding (Calosi, Pierluigi 2014) or of the meronomy in the Russian tradition (initial work – Meyen 1974; see review: Chebanov 2017). In this case, the central generalization of meronomy is the idea of the refrain or the repeating polymorphic set – RPS (Meyen 1974; cf. Chebanov, Naishul 2015). A

typical example of the refrain in linguistics and semiotics is the paradigm (Chaikovsky 1986).

Biological anatomy and morphology, as well as physiology, which are included in the concept of the organism (see in detail Chebanov 2005), have a very rich experience in describing structure, the key category of which is Goethe's idea of homology. However, this experience is not sufficiently structured and biologists cannot present in an explicit form a list of existing plans of the structure of organisms and their parts.

Fundamental for meronymy is the "part-whole" relationship, which can be understood in a very different way. A variant of this understanding is the *'consists of'* relation, suggesting the transition from the whole to the set of its components. So, in linguistics, which in many ways is a model for the formation of the conceptual basis of semiotics, one can find expressions such as "the morpheme consists of phonemes", "the lexeme consists of morphemes", etc. However, these expressions are senseless because they confuse the units of observation and units of abstract analysis. Juri S. Stepanov, who was considered the author of the term "biosemiotics" (Stepanov 1971) for a long time - prior to the popularization (Kull 1999) of the paper by Friedrich S. Rothschild (1962), suggested a scheme for coordinating language units (Fig. 1).

From the diagram in Fig. 1 it is clear that the units of the abstract level are not in any relation with each other, as are the empirical units with abstract units of another level (as well as the ideas of the Platonic world). In general, the relation *'consists of'* the meronomical aspect considered in detail by Simon G. Kordonskii (Kordonskii 1985; 2001). One way or another, it turns out that what is designated as *'consists of'* is a large set of different relations and procedures that connect the whole with what it consists of, what this whole can be decomposed into, what remains after the destruction of this whole, etc.

In this respect, well-known for Don as a linguist, the glossematics of Louis Hjelmslev (1953) is of interest. Glossematics gives a fairly well articulated formal description of the meronymy of natural language. Glossematic meronymy is suitable for describing the biosemiotics of the functioning of the genetic code, in which, as in "natural" language, linear (one-dimensional) relations (that correspond to a one-dimensional time) dominate. This offers some grounds - in connection with semiotics of the genetic apparatus - to talk about biolinguistics (Gimona 2006; Ó Nualláin 2006) as one of the directions of an implicit temporal (see Tchertov 2005) biosemiotics. One-

dimensional spatial biosemiotics is insufficient to describe the cortical layer of the oocyte, antibodies or the postures of animals.

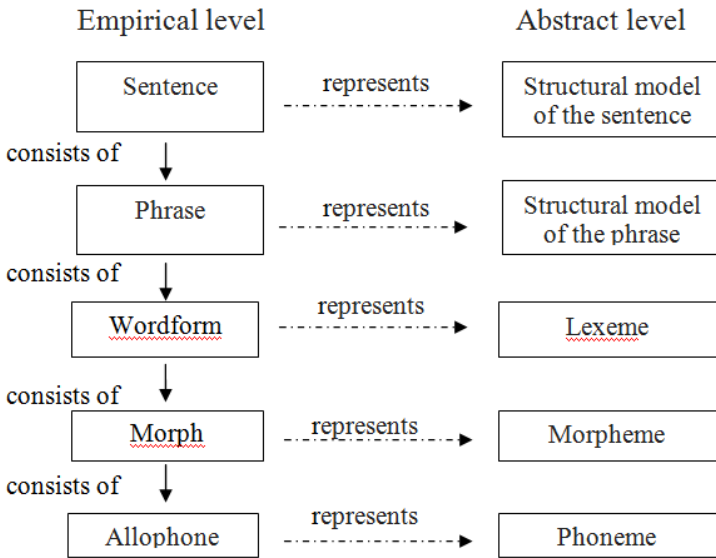


Figure 1. A scheme for coordinating language units (Stepanov 1975: 220).

In all these cases, we are talking about different types of meronomies of sign bodies. It is possible that the meronomy of *planes of content* is more universal. At the same time, the meronomy of such bilateral units as morphemes or words is very specific. The latter, however, does not exclude that at higher levels of organization of semiotic structures (superfrasive unity, text, discourse and their biosemiotic analogues), the meronomies of *planes of content* may turn out to be more similar.

One way or another, the meronomy of biosemiotic means requires study. Moreover, following the distinction of Hjelmslev, we can speak about three types of meronomies: the meronomy of semiotic means as bilateral units and two types of meronomies of figures - figures of the *expression plane* and figures of *content planes*. About these meronomies we can say the following.

- (1) Almost all the existing biology, as already mentioned, is a study of the figures of the *expression plane* of biological semiotic means and, thereby, biological meronomy (with its distinction of anatomy and morphology) is a meronomy of the figures of the *expression plane* of living semiotic means. For the explication of this meronomy, it is enough to have a semiotic rethinking (compare Emmeche, Kull, Stjernfelt 2002) of biological knowledge (but what is the volume of material that is subject to such a rethinking?).
- (2) At the same time, the meronomy of the figures of biological semantics has almost not been developed at all. Meanwhile, for its development, a rich and diverse material can be used, including:
  - (a) Aristotle's formulation of the question of the language of animals and human-animal interspecies communication;
  - (b) general semantics as a sphere embracing philosophy, logic, psychology and pedagogy;
  - (c) the idea of continuum flows of consciousness in transpersonal psychology;
  - (d) semantics as a division of semiotics;
  - (e) linguistic semantics;
  - (f) the physiology of higher nervous activity;
  - (g) immunology;
  - (h) study of the genetic code;
  - (i) the concept of *umwelt* proposed by Jakob von Uexküll;
  - (j) etc.
- (3) The meronomy of bilateral living semiotic means must be built from scratch.

Let us welcome Don's contribution to the development of all types of biosemiotic meronomies!

## References

- Calosi, Claudio; Pierluigi, Graziani (eds.) 2014. *Mereology and the Sciences: Parts and Wholes in the Contemporary Scientific Context*. Dordrech: Springer.
- Chaikovsky, Yuri V. 1986. Grammatics of biology. *Vestnik Akademii nauk SSSR* 3: 47-58.

- Chebanov, Sergey V. 1993. The ordinary miracle of life in perishable organism. *Folia Baeriana* 6, 116–120.
- Chebanov, Sergey V. 2002. Bilateral biosemiotics: A problem of sense on a super-triplet level. *Gathering in Biosemiotics 2 (Abstracts)*. Tartu: University of Tartu, 11.
- Chebanov, Sergey V. 2005. Interpretation of a body and comprehension of life. *Logos zhivogo i germenovetika telesnosti*. Moscow: Institut kul'turologii, 339–406 (in Russian).
- Chebanov, Sergey V. 2017. Meronymy of S. V. Meyen: to the 40th anniversary of formulation *Lethaea rossica*. 14: 64–92 (in Russian).
- Chebanov, Sergey V.; Naishul, Vitaly A. 2015. Refrainment of the world: Refrain of social institutions. *Paleobotanicheskij vremennik. Prilozhenie k Lethaea rossica. Rossijskij paleobotanicheskij zhurnal*. 2: 90–114 (in Russian).
- Emmeche, Claus; Kull, Kalevi; Stjernfelt, Frederik 2002. *Reading Hoffmeyer, Rethinking Biology*. (Tartu Semiotics Library 3.) Tartu: Tartu University Press.
- Gimona, Mario 2006. Protein linguistics – a grammar for modular protein assembly? *Gathering in Biosemiotics 6 (Abstracts)*. Salzburg: Telos – Philosophische Praxis, 39.
- Hjelmslev, Louis 1953. *Prolegomena to a Theory of Language*. Baltimore: Waverly Press.
- Kull, Kalevi. 1999. On the history of joining bio with semio: F. S. Rothschild and the biosemiotic rules *Sign Systems Studies* 27: 128–138.
- Kull, Kalevi; Emmeche, Claus; Favareau, Donald 2008. Biosemiotic questions. *Biosemiotics* 1(1): 41–55.
- Kordonskii, Simon G. 1985. Construction of scientific ontology. *Problemy metodologii nauki*. Novosibirs: Nayka (in Russian).
- Kordonskii, Simon G. 2001. *Tsikly deiatel'nosti i ideal'nye ob"ekty*. Moskva: Pantori (in Russian).
- Meyen, Sergey V. 1973. Plant morphology in its nomothetical aspects. *Botanical Review*. 39(3): 205–260.
- Ó Nualláin, Seán 2006. Genome and natural language; how far can the Analogy be extended? *Gathering in Biosemiotics 6 (Abstracts)*. Salzburg: Telos-Philosophische Praxis, 52.
- Opitz, John M. 2004. Annals of morphology: *Goethe's bone* and the beginnings of morphology. *American Journal of Medical Genetics* 126A(1): 1–8.
- Rothschild, Friedrich S. 1962. Laws of symbolic mediation in the dynamics of self and personality. *Annals of New York Academy of Sciences* 96: 774–784.
- Stepanov, Juri Sergeevich 1971. *Semiotika*. Moskva: Nauka (in Russian).
- Stepanov, Juri Sergeevich 1975. *Osnovy obschego yazykoznaniya*. Moskva: Prosveschenie (in Russian).
- Tchertov, Leonid Faibyshevich 2005. Spatial semiosis and time. *Sign Systems Studies* 33(2): 297–314.



# **Don Favareau's contribution to the sense of biosemiotics for semiotics, and *vice versa***

***Augusto Ponzio***

University of Bari, Italy

Biosemiotics is now recognized as a fundamental field of knowledge. More than an important branch of semiotics, biosemiotics is an orientation thereof, which emerges above all if, with Thomas Sebeok, we connote semiotics as a *doctrine of signs*, rather than as a science or theory of signs. The expression "doctrine of signs", adapted from John Locke – for whom a doctrine is a body of principles and opinions that vaguely goes to form a field of knowledge – occupies a place in a tradition of thought taken up and developed by Charles S. Peirce, Charles Morris, and the very same Sebeok. In this tradition we may also include Victoria Lady Welby (Petrilli 2009; 2015).

Peirce focusses on signifying conditions. This leads to the possibility of identifying foundations shared by the human sciences and the natural sciences. Thanks to Peirce's "doctrine of the categories", the two opposite conceptions of reality, which have dominated Western philosophical thought, at last meet. We are alluding here to the conception of reality which originates from Aristotle, on the one hand, and which recites that things exist on their own account and independently from mind; and to the opposite conception which describes reality as depending on mind, on the other. The point of encounter is the semiotic perspective which describes objects and minds as part of the common process of semiosis.

To biosemiotics, Don Favareau has made a major contribution concerning its status and, specifically, for a better understanding of its overall sense for semiotics. We are now referring especially to his “A stroll through the worlds of science and signs” (Favareau 2010b), and to his Introduction, “An evolutionary history of biosemiotics” (Favareau 2010c), both of which are included in his *Essential Readings in Biosemiotics: Anthology and Commentary* (vol. 3 of book series Biosemiotics 3, then co-edited by Marcello Barbieri and Jesper Hoffmeyer), edited by Donald Favareau (2010a).

With Susan Petrilli, I published in *Semiotica* – the official organ of the International Association for Semiotic Studies since it was founded in Paris with the collaboration of such illustrious personalities as Thomas A. Sebeok, Emile Benveniste, Roman Jakobson, Roland Barthes, Julia Kristeva, Umberto Eco, Ferruccio Rossi-Landi – an article-review, “Biosemiotic scenarios” (Petrilli, Ponzio 2013), dedicated to this pivotal book edited by Don Favareau. Here I shall add some further considerations taking up some essential points and connecting them to the title of the book of 1998 by Marcel Danesi – editor-in-chief of the journal *Semiotica*, after Sebeok’s death – dedicated to Sebeok’s global semiotics, his *The Body in the Sign*.

Semiosis presupposes a living body. The organic, the biological is the condition for a sign to subsist as a sign. There is no semiosis without life. And, *vice versa*, there is no life without semiosis, without signs. Biology and semiotics, therefore, are closely interconnected. What emerges clearly from the volume edited by Don Favareau and from the pages of his Preface and of his Introduction is that the relationship between semiotics and biology is not simply a fact of interdisciplinarity. Biosemiotics did not arise from the encounter between biology and semiotics as though they were two separate entities that had an appointment to meet somewhere. Biosemiotics is an inevitable point of arrival: on the one hand, for studies in biology, which are ever more aware that life consists in communication and consequently in signs; on the other, for semiotics, which at a certain point realizes that signs and communication belong to the whole of the organic world. Biosemiotics focuses on the role of sign relations. Studies in biology, in all its fields, at the macro level, at the micro level, in the extrahuman sphere of zoology, in the anthropological sphere, in the plant sphere, and in the mycotic, cannot but study signs and communication systems. As far as they are concerned, semiotic studies must necessarily address the “material bases of signification” (Prodi 1977).



As Sebeok pointed out, the term “bridge” used to indicate the relationship between the so-called “natural sciences” and the “human sciences” is not appropriate. On this account, after considering the contribution made by Giorgio Prodi (1977) to surpassing the idea of the “two cultures”, Sebeok evokes Juri M. Lotman, praising him for first taking the “courageous step” of completely eliminating the concept of “bridge” from the discussion, replacing it with the “semiotically interesting” transcodification procedure. Thus Sebeok cites Morris for having stated in 1946 that an education that gives the right place to semiotics would destroy the divergence between science and humanities thereby eliminating it from its very foundations (Sebeok 2015: 17–18).

## References

- Danesi, Marcel 1998. *The Body in the Sign: Thomas A. Sebeok and Semiotics*. Ottawa: Legas.
- Danesi, Marcel; Petrilli, Susan; Ponzio, Augusto 2004. *Semiotica globale. Il corpo nel segno: introduzione a Thomas A. Sebeok*. Bari: B. A. Graphis.
- Favareau, Donald (ed.) 2010a. *Essential Readings in Biosemiotics: Anthology and Commentary*. (Biosemiotics 3.) Dordrecht: Springer.
- Favareau, Donald 2010b. Preface: A stroll through the worlds of science and signs. In: Favareau, Donald (ed.), *Essential Readings in Biosemiotics: Anthology and Commentary*. (Biosemiotics 3.) Dordrecht: Springer, v–x.
- Favareau, Donald 2010c. Introduction: An evolutionary history of biosemiotics. In: Favareau, Donald (ed.), *Essential Readings in Biosemiotics: Anthology and Commentary*. (Biosemiotics 3.) Dordrecht: Springer, 1–77.
- Petrilli, Susan 2009. *Signifying and Understanding: Reading the Works of Victoria Welby and the Signific Movement*. (Semiotics, Communication and Cognition 2.) Boston: De Gruyter Mouton.
- Petrilli, Susan 2015. *Victoria Welby and the Science of Signs: Significs, Semiotics, Philosophy of Language*. New Brunswick: Transaction Publishers.
- Petrilli, Susan; Ponzio, Augusto 2013. Biosemiotic scenarios. *Semiotica* 195: 373–408.
- Prodi, Giorgio 1977. *Le basi materiali della significazione*. Milano: Bompiani.
- Sebeok, Thomas A. 2015 [1977]. Bridges. In: Petrilli, Susan (ed.), *Scienze dei linguaggi e linguaggi delle scienze*. (Series “Athanon: Semiotica, Filosofia, Arte, Letteratura”.) Milan: Mimesis, 11–22.



## **The art of reciprocity and the work of Don Favareau**

***Victoria N. Alexander***

Dactyl Foundation, New York, USA

Shepherding many a special issue and anthology, Don Favareau demonstrates remarkable literary style, diplomacy, and erudition. At times, he has seemed to be the glue without which the biosemiotic project might have long ago come apart at the seams. Technically leaderless though our movement is, Don's tendency to facilitate interaction and to help us understand one another has been a significant catalyst. Although some of us may still prefer our own peculiar terms and definitions – and after seventeen years, we really are still a gathering of mavericks – a common disciplinary framework *is* emerging (not *despite* our differences so much as *because* of them). I think we may have Don to thank more than anyone else for this. He seems to me to have digested more biosemioticians (in the manner of a proto-eukaryote) and, though he has his own special interests, his work is very much a part that reflects/projects a burgeoning whole. Don has helped bring about directionality in our field, not by being a director, but by being an active interpreter and communicator. Although Marcello Barbieri declared in 2007 that “Nothing yet is settled in biosemiotics” and Don admitted this was pretty much still the case in 2010 (Favareau 2010: ix), more lately a bit of lawfulness, the inevitable outcome of all our semiotic interactions, can finally be discerned accreting in the mists.

In *Essential Readings in Biosemiotics: Anthology and Commentary*, Don included an early review of the book within the book itself,

illustrating the recursive process that is biosemiosis. The critical reviewer used metaphors from engineering, noting biosemiotics wasn't quite "concrete," lacked "footings" (Favareau 2010: ix), repeating the misconceptions, common to so many education theorists, about how learning works. We realize you can't start with the basics and add complexity later. Don knew better than to try to pour a foundation for a building whose form was in the making and whose making would find the form.

I met Don in New York in 2006 when he and Jesper Hoffmeyer accepted my invitation to talk at the Society for Literature, Science and the Arts (SLSA) conference on "Evolution: Biological, Cultural, and Cosmic" at Dactyl Foundation. Wendy Wheeler, also a member of SLSA, had suggested biosemiotics be included in the program as a much-needed interface between the sciences and humanities.

They presented on the "Origin of species by natural semiosis", arguing that "chance mutations are not selected because they are beneficial; they are beneficial because they happen to appear in a relational system which was already well prepared for them"<sup>16</sup>. Our audience found this very provocative. Lynn Margulis was the keynote at the conference, and Don and Jesper led with a biosemiotic interpretation of her theory of symbiogenesis. If Lynn was a heretic to the neo-Darwinian dogmatists, Don and Jesper were doubly so. I remember Don chuckling about how putting "biosemiotics" on one's résumé could be a real career killer. Who is this brave soul with the cool gallows humor? Where do I sign up? thought I. These are my kind of people. So began my engagements with biosemiotics.

What could be more rewarding and fun than rebelling against positivism *and* postmodernism? I joke, but we do really need to get the pendulum of western thinking to swing freely in multiple dimensions, so the work of one generation is not erased by the next in a relentless periodic system that gets nowhere and does not evolve. We need a more appropriate language for that. We need verb forms for listening and talking that include the notion of interpreting at the same time. We need anthologies to be commentaries.

In our field Don's practices have embodied the very idea of the biosemiosis that he describes. I wish the English language could be as representative of semiotic processes. We have dyadic terms, like "give and take", that don't even hint at the reciprocity of such exchanges. Accordingly Don invents hyphenated terms, for example, explaining

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<sup>16</sup> See <http://dactylfoundation.org/?p=43>.

that any response is “last context-formed and next context-creating” (Favareau 2015: 595), showing how we are created by our worlds even as we create ourselves and our worlds.

On the occasion of Don’s sixtieth birthday, we pause to review his work and to express our gratitude. The second phase of the biosemiotic project can begin now as we take the robust and flexible framework we’ve co-created and get to work populating the relevant next fields.

## References

- Favareau, Donald (ed.) 2010. *Essential Readings in Biosemiotics: Anthology and Commentary*. (Biosemiotics 3.) Dordrecht: Springer.
- Favareau, Donald 2015. Creation of the relevant next: How living systems capture the power of the adjacent possible through sign use. *Progress in Biophysics and Molecular Biology* 119: 588–601.



## **“Is that right?” – Don Favareau, Don Corleone, and the semiotics of friendship**

***Claus Emmeche***

University of Copenhagen, Denmark

Celebrating a round number birthday of Donald Favareau – always ‘Don’ among friends – is an occasion to reflect upon the importance of friendship in any society and some of the semiotic forms it may take, given social circumstances and the character of the persons involved, as for instance acquaintances, close colleagues, or friends. Apart from his seminal contributions (that meet the highest standards of scholarship aimed at by any don) to the theoretical development of biosemiotics and its historiography, Don has been a very crucial hub in the informal communicative-organizational network holding together the biosemiotic community and the ongoing academic exchanges in the field. He has not only performed his civic duties at the International Society of Biosemiotics with great diligence and discretion; Don’s engagement, enthusiasm and delight in investigating complexity at the borders of mind, brain, language and action has always been inspiring and has contributed to a critical-friendly atmosphere so characteristic of the Gatherings in Biosemiotics.

An expression of this spirit of intellectual friendship was Don’s initiative, together with Paul Cobley, to support and cheer up John Deely in June 2016, when Deely was no longer able to participate in meetings or do more research due to a terminal illness. Don and Paul collected a series of video-recorded greetings to John from biosemioticians for whom his work and friendship had been truly

important, edited the material into a brief sequence, "For John", and helped him get access to this gesture of care and concern.

The video starts showing in close-up a handhold book cover of the volume *Tractatus de Signis. The Semiotic of John Poinot* (Poinot 1985). Then, behind the cover, appears Don's studious face, reading aloud the following:

"In friendship there is an order to the good which I will the friend; the order is to the good directly, to the friend indirectly; the good is the terminus *which*, the friend the terminus *to which*"

whereupon Don, his face expressing intense wondering, asks "Is that right? Better check what John Deely has to say about this". Finding his copy of Deely's brick of *Four Ages of Understanding*, Don suddenly turns his gaze directly at the camera, seeing, apparently to his surprise, Deely. Don greets him, and starts introducing John to the coming messages. So follows a series of salutations from a semiotic Parthenon of Jesper Hoffmeyer, Marcel Danesi, Kalevi Kull, Paul Copley, Augusto Ponzio, Susan Pertrilli and Farouk Y. Seif. The sequence ends with Don finally asking John to look here at Don's table - we see an impressive heap of all John's books spread out - and Don considerably wish John to take a moment of rest now, not wanting to tire him or expect him to write back - "take care my friend".

The affectionate effect of the video upon any interpreter who has been involved with work in semiotics is moving, and illuminates not only the importance of Deely's work, but also a somewhat neglected aspect of Don's work - namely his integrative powers of academic friendship.

But what is friendship, and its relation to "the good which I will the friend", especially in an academic setting? This is a question too big to be answered here (I tried to spell out this question in Emmeche 2015); but no doubt, *the good* is related to knowledge and truth: as members of the academy should have learned since Plato, and in lucky circumstances, friendship and the good goes together. What we can do here is to pursue the initial question asked by Don, "Is that right?", not answered in the video.

Parts of an answer may be found in Poinot's *Tractatus*. The quote above, read by Don, is Deely's own entry 'friendship' (Poinot 1985: 539) from his long and carefully drafted explanatory index to Poinot's dense late Latin. The entry refers to a part of the main text (p. 157f) in which Poinot tries to explain how the same sign relation can succeed in achieving the object signified ("the significate")



directly, and “a cognitive power” only indirectly, as he says. This is part of Poinso’s attempt to answer his “Question 3”, i.e., “whether the relation of sign to signified is the same as the relation of sign to cognitive power” (p. 153). Notice how Poinso, in the year 1632, first uses the analogy of religion, and then that of friendship. The whole passage reads:

“Passing over many and various explanations of how the same relation could be said to attain the significate directly and a cognitive power indirectly, the more adequate explanation seems to be that a sign respects a power indirectly inasmuch as being manifestable to a power is included within the very thing signified. And so, since the significate is not respected as it is something absolutely in itself or according to some other order, but as manifestable to a cognitive power, the power itself is necessarily touched indirectly by that relation which attains the significate not by resting on it precisely as it is in itself, but as it is manifestable to a cognitive power, and thus in some measure a sign-relation attains a cognitive power in that rationale of something manifestable to another, not by separately attaining the power, but by attaining that which is manifestable to the power, just as, for example, the virtue of religion respects for [its] formal object worship as something to be rendered to God, not that it respects God directly, for thus it would be a theological virtue, but worship directly, and God but indirectly, inasmuch as God is contained in worship as the terminus to which worship is rendered, and religion respects worship as under that terminus, and not absolutely or under some other consideration. The order to good that I will for a friend in friendship is the same; for that order is not terminated at the good willed absolutely, but at a good willed as it is referable to the friend, and the friend as the terminus of that good [willed] for someone terminates the same relation, even though not as the direct object, but as included in the direct object, by the fact that that direct object, the willed good, is respected as relative to this person and not absolutely.” (Poinso 1985 [1632]: 157f)

To a modern reader, this may appear dense and maybe not completely transparent, but it is not much different from Peirce’s well-known struggles to explain what a triadic sign relation is. The length of Deely’s explanatory index (that he saw as one, maybe *the* major intellectual benefit of the translation) testifies to the hermeneutical challenges we are up to in grasping Poinso’s *Tractatus*, and the index is a brave effort to regain what could be ‘lost in translation’ (linguistic as well as cultural). The analogy to religious worship seems to presuppose a distinction between religious and theological virtue (Deely, in his index, just restates that “Religion respects worship

directly, God indirectly” without further explanation). Though included in my attempt to map the quote (figure 1), I will not try to clarify the theology involved in this first analogy, but the friendship analogy, as restated by Deely and read by Don, deserves further reflection.

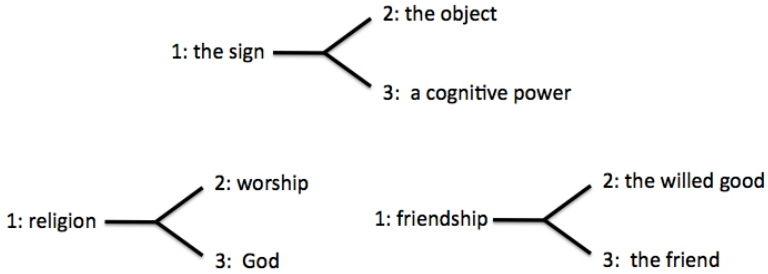


Figure 1. Diagram of Poinset’s two analogies to the sign relation (as quoted in the text), that of religion, and that of friendship (Poinset 1985: 157f), emphasizing the triadic nature of the relations. That Poinset uses these analogies does not imply that he understands them as semiotic relations; their *relata* are merely triadically connected. For a semiotic analysis of friendship, see Emmeche (2014).

Poinset’s brief and single mention in *Tractatus de Signis* of the “good that I will for a friend” must be understood in the context of a classic understanding of friendship in Aristotle that focuses on mutual good will. In the best kind of friendship, according to Aristotle, the friends will each other the good, not only for their own sake (for individual use or pleasure), but also for the sake of the other as a friend, that other being like ‘another self’.<sup>17</sup> The phenomenon of good will demonstrates “the existence of an unselfish core to all friendship” (Pangle 2003: 155), but good will by itself “falls short not only of friendship but even affection” (*ibid.*). Good will can be seen as a “disinterested but passive

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<sup>17</sup> Thus, “[p]rimary friendship not only safeguards the moral virtue of the partners and enriches their moral outlook, it also provides the mirror in which each may see himself” (Stern-Gillet 1995: 54); and she quotes (*ibid.*, p. 50) from Aristotle’s *Eudemian Ethics* (1245a5–9) that “to know a friend is in a manner to know oneself”. Aristotle’s famous notion of the friend as “another self” has received a whole library of comments.

seed of friendship" (*ibid.*, p. 156). Furthermore, good will may be seen as friendship's possible "moving cause", acting as the beginning of friendship, "its precondition" (Gurtler 2014: 38). The friends – according to Aristotle's ethics when he discusses the best, most fully developed, kind of friendship – must actually have a wish to be together, live together, share activities, and help each other if needed. They may naturally do good deeds to each other, for there is mutuality in the relationship, but it surpasses pure exchanges based on utility. Pangle quotes from Aristotle's *Nicomachean Ethics*:

One who has been the recipient of a good deed, in return for what he has received, gives good will, and so does what is just. But the one who wants to do someone good in hopes of getting assistance from another does not seem to have good will toward that person, but rather toward himself, just as he is not a friend if he serves him in order to make use of him. (1167a14–18) (Pangle 2003: 156).

In the scholarship of Aristotle's philosophy of friendship, the question of use and self-interest in friendship has been much discussed, especially in relation to the three kinds of friendship Aristotle distinguishes: friendships of use, of pleasure, and the best, 'primary' friendships, also called friendships of virtue, or character. According to Mooney and Williams (2016), most scholars agree with an analysis given by John M. Cooper according to which the lesser friendships of utility and pleasure (which primarily have individual utility or pleasure as the intention for entering friendship; cf. Gurtler 2014: 46) are "still to be counted as genuine friendships even if not as character friendships" (Mooney, Williams 2016: 69), because the two lesser kinds "are also those in which the friend takes the other – even as an object of care – as a person *qua* bearer of characteristics conducive to pleasure or utility as well. They also involve wishing the other well for her own sake, at least in some respects" (*ibid.*). This altruistic aspect is an important factor for distinguishing, within the classic tradition, between friendship and mere friendly relations. As Gurtler (2014: 40) notes, for a vast number of our interactions with others "we are quite content with creating a friendly atmosphere in which to carry out the various pursuits that the routines of daily life entail", but the

individual whom one wants to befriend stands out in some way as good and not merely useful or pleasant. Thus our motive for friendship is that we like someone in such a way that we see in him some good that we want to get to know in the intimate way that friendship offers (*ibid.*).

About the person “who wants to do someone good in hopes of getting assistance from another” (cf. the Aristotle quote above), Pangle emphasizes that “good deeds done out of expectation of reward do not deserve any return or reward”, only “that ones done generously” deserve

gratitude and kind regard. The benefactor has no just claim upon a return, because his act of giving, if not mercenary, was complete in itself. But good will is owed in the sense that it is the natural, healthy, appropriate response to kindness (Pangle 2003: 156).

This natural response, comments Pangle, is “less than a binding obligation”, but perhaps “more than the passive good will one has for an admirable stranger”. Becoming a benefactor, “he has begun to intertwine his life with one’s own” and has taken the first step towards becoming a friend (*ibid.*).

The sense in which good will is owed in friendship – where “owed” normally means having a weak or strong obligation to pay or repay something (money, favours, attention, or perhaps even respect) in return for something received – must differ according to the type and stage of a developing friendship and the characters of the persons involved. “Repayment” – also of rather immaterial kinds of goods like kindness and attention – may be a latent expectation that can cause problems (like frustration for the benefactor and anxiety for the beneficiary) if it were not met after some time. Even gifts given out of apparent generosity may become problematic. Pangle comments on the absurdity of a friendship in which two people make it their highest aim to be the other’s benefactor, “an absurdity we all fall into when we quarrel over a restaurant bill that we and a friend both wish generously to pay” (Pangle 2003: 69): What if both friends simultaneously decide to be most noble-minded and selflessly give away the pleasure of being generous? It’s like an infinite regress. Here, each is competing, perhaps with a certain self-denial, for the position he yearns to possess as the selfless benefactor, but in doing so, he pursues a good for himself he cannot share with the one he seeks to benefit. Pangle does not give a solution to the problem of moral competition in virtuous friendship – it is easier in utilitarian friendship where the partners can arrange things so that they both profit equally – but she clearly sees that this kind of self-denial in competing for nobility is hardly “congenial to noble souls” (Pangle 2003: 124).

The problems related to the forms of mutuality also touche upon the political dimensions of friendship, friendship in the public or ‘civic

friendship' that Aristotle sees as a utilitarian relationship. Aristotle notes that to "be obliged to return favors to many people is burdensome [...] and having more friends than are sufficient for one's own life is superfluous and an impediment to living nobly" (*NE*, 1170b24–27, quote from Pangle 2003: 192). For Aristotle, you can only be best friends to very few persons due to basic moral and practical constraints; but there are many other forms of friendship, and as a citizen in ancient times one had to be involved in person in political and utilitarian relationships of friendship to be able to live a relatively secure life. Both in the Greek *polis* and in ancient Rome, the political significance of friendship was crucial, much discussed, and in some respects very different from friendship in modernity that tends to be seen as a relation belonging to the private sphere (cf. Österberg 2010). While moral philosophical scholarship has focused upon the 'best' or 'virtuous' friendship in the Aristotelian sense, political philosophy (e.g., Hutter 1978; Digeser 2016) and anthropological research (e.g., Desai, Killick 2010; Grindal, Salome 2006; Bell, Coleman 1999) have been just as interested in exploring the challenges of civic, political, and other more utilitarian kinds of friendship, and the ambiguous status of expectations of mutuality in friendship, insofar as we include care, attention, affection, willingness to help the friend in case of need, or similar (immaterial or potentially material) goods of this relation.

If Poinsett is right in claiming that "[t]he order to good that I will for a friend [...] is not terminated at the good willed absolutely, but at a good willed as it is referable to the friend" (cf. the long quote above), then that good, as referable to the friend, is part of the intrinsic value of primary friendship, that is good in itself. It could, however, also be part of lesser, more dependent forms of good will towards persons whom we befriend for pleasure, utility, or even necessity. Think of the present world, in which not all states are equally developed with strong enough institutions to provide basic security, legal justice, and opportunities for welfare and happiness for all citizens. It was not only in the ancient regimes like that of Athens, where friendship could become a tool in the fight for power, or in ancient Rome, where citizens needed to make allies and enter into strong bonds between patrons and clients. Neither these phenomena nor the friend/enemy distinction have disappeared.

One could object to the idea that patron-client relationships had anything to do with friendship, but where should we actually draw the line? In the Greco-Roman societies, we find a combination of social stratification, popular awareness of social distinction, and exchange of material and services across different layers of the population, in

addition to a passion for gaining honour and avoidance of losing it. (Some of these elements are also found in the academic world). In such societies, the exchange of goods in the form of gift giving, or benefaction, is used to maintain political alliances, as stated in the penetrating analysis of Zeba Crook (2013), who asks “When is a gift not really a gift? and Who can be friends?” (*ibid.*, p. 64).

Crook’s answer to the first question is “when it is a fictive gift”, meaning that “the gift might be cloaked in the language of equality and generosity, but it is in reality intended to exercise power over another. A relationship of patronage can often be inaugurated when a wealthy person “offers” something (an object or a service) to someone lacking the resources (material or otherwise) to attain it alone. A gift is not a gift when status and value, or the inability to repay, impose themselves upon the exchange” (*ibid.*, p. 67). Crook models the ‘gift’/‘fictive gift’ distinction as a continuum to emphasize that even though true (symmetrical) gift-exchange and (asymmetrical) patronage are distinct, they are easily confused, and patronage is often masked by a language of friendship to hide relationships of dependence and inequality, because of the stigma and decrease in honour often associated with relationships of dependence.

Crook’s answer to the second question is: “People involved in a relationship of dependence cannot *really* be friends, for there is neither equality of status nor equality of exchange” (Crook 2013: 72), they can only be *fictive friends*. But also fictive friendship figures in a continuum modelled by Crook between true friendship and clientship; true friendship being defined in the Hellenistic world by equality of status and means, reciprocity, good will, unity and loyalty, and frankness, and it is often lack of equality that hinders true friendship. Consider an example of fictive friendship given by Crook, the one between Criton and Archedemus:

Xenophon (Greek, fourth century BCE) relates a conversation (*Mem.* 2.9) in which Socrates advises Criton on how to escape the clutches of people who keep trying to blackmail him: blackmail them back. Socrates asks, “Why not keep a man” around to act as a dog guarding the sheep? When Criton worries that even this man would turn on him, Socrates assures him there are many men in the city who would be honored to be a *philos* to Criton (*Mem.* 2.9.3). Given the context, clearly Xenophon’s Socrates is not imagining someone of equal social station to Criton, so he cannot be suggesting the two will be close friends. He is suggesting using one of Criton’s clients to do some dirty work. Proving this point, Criton settles on Archedemus, an eloquent but poor man. Archedemus is so good at persuading people to drop their actions against Criton that soon Criton’s

*philo*, in this case social equals, want to employ Archedemus too (*Mem.* 2.9.7).

Archedemus is not Criton's social equal; he is a client. In return for Archedemus's work, Criton gives him provisions from his crops, wine, and wool, and invites him to dinners. There is reciprocity, but not equality; and Socrates' use of *philos* earlier does not imply real friendship. Nor does Xenophon think so. He refers to Archedemus as Criton's dog from which the other shepherds (Criton's friends) want to benefit (*Mem.* 2.9.7). It is the stereotypical patron-client relationship, so, of course, Archedemus is eventually mocked by his peers; they call him *kolax* ("flatterer"; *Mem.* 2.9.8), because he does not have the freedom to speak his mind. Archedemus responds with the claim that it is better to have honest men like Criton and his friends as *philo* than to be dishonest yourself. Xenophon closes with the observation that Archedemus came to be counted among Criton's *philo*, but clearly the friendship is fictive, even allowing for Criton's deep appreciation of Archedemus's work. (Crook 2013: 70f).

Crook's study of fictive friendships in the ancient world is a fine anthropological illustration of what Mooney and Williams (2016) in their philosophical analysis call asymmetrical friendships. Their point is that such friendships may still be genuine and not merely faked, while Crook stresses the genuine distinction between friendship and clientage, though acknowledging a "grey area" or continuity in between.

We get here a glimpse of the fact that in the ancient world, few thinkers doubted that "understanding the nature of friendship is vital to understanding the nature of virtue, what it means to be a good citizen and a good man, and what it means to live the good life" (Rahe 1997: 142). This was a world in which, to be a "good" Athenian, or to be a "good" Roman required being "armed", in one way or another, with "true friends" (*ibid.*), and in which justice was traditionally conceived as helping one's friends – and harming their enemies as well. Classen (2011: 6) notes how friendship often turned into political partnerships, which found their public expressions in symposia, or festive dinners, hunting parties, or political collaboration:

In Hellenistic Greece friends of the rulers often assumed or were assigned important official roles, and similar situations can also found in many other periods and cultures. Ancient philosophers regularly focused on 'friendship' as the essential bond among people, as the foundation for social communities, and as the basis for the public development of virtuous behavior [...]. Friendship is focused on creating a *prōton philon*, the public good.

It was the process of modernization, increasing individualization, state building and construction of legal systems and strong public institutions based on professionalism without corruption, that made friendship as a public-political phenomenon less attractive (Österberg 2010; Grüne 2011). Yet, friendship in public – or in the borderland zones between family, civic society and the state, between public and private, patrons and clients, formal and informal norms, legal and illegal actions – never disappeared completely, more so in some countries than others. There are illegal brotherhoods and mafias in Italy, USA, and Denmark, but their size and influence differ; just as there are legal guilds, unions, private societies, grass-root movements, clubs, etc., conducive to forms of friendship in healthy interaction with the rest of society. Phenomena like corruption, nepotism, and cronyism – not to mention criminal organisations (and the *omertà* code of honour demanding non-cooperation with authorities and non-interference in the illegal actions of others) or secrete conspiracies against the political order – have as long a history as political governance and political friendship in general, but they cast a darker shadow upon the philosophical ideals of friendship and complicate “the good which I will the friend”.

The political historian Paul A. Rahe wrote a captivating essay about the politics of friendship in ancient times and today (Rahe 1997), taking departure from Francis Ford Coppola’s classic film *The Godfather* (1972) based on Mario Puzo’s novel of the same name from 1969. The novel details the story of a fictional Mafia family based in New York, headed by Vito Corleone (the Don). Paul Rahe analyses the dialogue between Don Corleone and Amerigo Bonasera (his name means literally ‘goodnight America’), a lesser character who plays a vital role in revealing a kind of merciful side of Don Corleone. Bonasera, a successful Italian-American undertaker, had tried to keep a distance from the Corleone family, knowing they are part of the Mafia, though Don Corleone’s wife is a godmother to Bonasera’s daughter. His daughter has been brutally beaten by a boyfriend and his friend for refusing to have sex after they had made her drunk. The men escape penalty because they are from wealthy, politically connected families – so much for public justice. In a state of despair, Bonasera decides to go to Don Corleone on the day of his daughter’s wedding to ask him to kill the young men (a Sicilian should never refuse a favour on the day of his daughter’s wedding). His request angers Don Corleone, who reprimands him for asking for a favour without showing the proper respect (in the past refusing his



friendship), and for seeking the attackers' deaths when his daughter was alive and would recover. Nevertheless, the Don agrees to grant a favour in return for Bonasera's "friendship" and the respectful address of "Godfather". Don Corleone also reproaches Bonasera for initially attempting to seek justice through the courts (breaking the omertà code), instead of coming to him first. As Paul Rahe (1997: 137f) comments,

No one who is steeped in Roman history can watch Coppola's film or read Puzo's novel without being reminded of the role played by friendship (*amicitia*) and what we now call 'patronage' in the public life of ancient Rome. Amerigo Bonasera wants to confine his relationship with Vito Corleone to the contractual realm: he wants to pay up front for services rendered; he wants to retain his freedom and autonomy, the independence required of a 'good citizen'; he wants to remain at a distance from the man about to act on his behalf; he has no desire to incur a moral obligation, for he recognizes all too well that obligations of this sort can be crippling. Keeping a distance and retaining one's independence is part of what it means to be 'a good American'. [...] Don Corleone, for his part, insists that there be more at stake in the doing of a service. He is about to confer a favor - what the ancient Romans called a *beneficium* - and he asks for no payment in return: for his services simply cannot be bought; when they are rendered, they are rendered solely as a "gift." Instead, he exacts reciprocity for this 'gift' in another form - one perfectly familiar to students of anthropology. In return for the favor that he has done, he expects that he be rendered the offices - in the singular, the Latin word is *officium* - that a client owes a patron: he demands respect, even deference; he expects undying gratitude and its outward signs; and he insists that Bonasera's 'first allegiance' be to him. What he asks of Bonasera is what the Romans called a *deditio in fidem*: his 'surrender into' Corleone's 'faith,' 'loyalty' or 'trust.' If some day the latter says, 'Jump!' Bonasera is to answer, 'How high?'

"Is that right?", we may ask. - Clearly, the "friendship" Don Corleone offers, is not the "primary" or "best" friendship that Aristotle described and a whole history of Western philosophy idealized. It is what Crook called "fictive friendship", though its implications, the debt, surrender and loyalty, are very real.

Thus, it is also very different from the kind of friendship Don Favareau has exemplified through his contributions to make biosemiotics such a fruitful field of inquiry and critical engagement. I am close to suggesting that what we see here is another interesting symbolic manifestation of the broadness of friendship phenomena, that I am tempted to call *the Don Corleone - Don Favareau continuum*.

Why continuum? Because within a general semiotic framework, modelling differences non-dualistically should be preferred over more simple dichotomies, and we have not yet been able to clarify exactly what friendship really is. However, we have come a long step further than Plato's dialogue *Lysis*, also analysing friendship, but ending aporetically. Apart from all theory, friendship is most of all something enacted and embodied, something known by and through shared actions and direct communication, and when I happen to meet Don again after long time of separation, I surely know what it is.

## References

- Bell, Sandra; Coleman, Simon (eds.) 1999. *The Anthropology of Friendship*. Oxford: Berg.
- Classen, Albrecht 2011. Introduction: Friendship – the quest for a human ideal and value from antiquity to the early modern time. In: Classen, Albrecht; Sandidge, Marilyn (eds.), *Friendship in the Middle Ages and Early Modern Age: Explorations of a Fundamental Ethical Discourse*. Berlin: Walter de Gruyter, 1–183.
- Crook, Zeba 2013. Fictive-giftship and fictive-friendship in Greco-Roman society. In: Satlow, Michael (ed.), *The Gift in Antiquity*. Chichester: Blackwell Publishing, 61–76.
- Desai, Amit; Killick, Evan (eds.) 2010. *The Ways of Friendship: Anthropological Perspectives*. New York: Berghahn.
- Digester, Peter E. 2016. *Friendship Reconsidered: What it Means and How it Matters to Politics*. New York: Columbia University Press.
- Grüne, Niels 2011. Freundschaft, Privatheit und Korruption: Zur Disqualifizierung sozialer Nähe im Kräftefeld frühmoderner Staatlichkeit. In: Descharmes, Bernadette; Heuser, Eric Anton; Krüger, Caroline; Loy, Thomas (eds.), *Varieties of Friendship: Interdisciplinary Perspectives on Social Relationships*. Göttingen: V&R unipress, 287–307.
- Emmeche, Claus 2014. Robotic friendship: Can a robot be a friend? *International Journal of Signs and Semiotic Systems* 3(2): 26–42.
- Emmeche, Claus 2015. The borderology of friendship in academia. *Amity: The Journal of Friendship Studies* 3(1): 40–59.
- Favareau, Donald 2016. For John: A message from his friends to the great John Deely. Published June 9, 2016.<sup>18</sup>
- Grindal, Bruce T.; Salome, Frank A. (eds.) 2006. *Bridges to Humanity: Narratives on Anthropology and Friendship*. 2nd ed. Prospect Heights: Waveland Press.

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<sup>18</sup> See <https://youtu.be/HMjSDuBLpuQ?list=UUuPprifEFeRltfgdT5q2yog> (Accessed June 13, 2017).

- Gurtler, Gary M. 2014. Aristotle on friendship: Insight from the four causes. In: Stern-Gillet, Suzanne; Gurtler, Gary M. (eds.), *Ancient and Medieval Concepts of Friendship*. New York: SUNY Press, 35–50.
- Hutter, Horst 1978. *Politics as Friendship: The Origins of Classical Notions of Politics in the Theory and Practice of Friendship*. Waterloo: Wilfrid Laurier University Press.
- Mooney, Brian T.; Williams, John N. 2016. Valuable asymmetrical friendships. *Philosophy* 92: 51–76.
- Österberg, Eva 2010. *Friendship and Love, Ethics and Politics: Studies in the Medieval and Early Modern History*. Budapest: Central European University Press.
- Pangle, Lorraine Smith 2003. *Aristotle and the Philosophy of Friendship*. Cambridge: Cambridge University Press.
- Poinsot, John 1985 [1632]. *Tractatus de Signis*. (Interpretive Arrangement by John N. Deely in consultation with Ralph Austin Powell.) Berkeley: University of California Press.
- Rahe, Paul A. 1997. Don Corleone, multiculturalist. *Business & Professional Ethics Journal* 16(1/3): 133–153.
- Stern-Gillet, Suzanne 1995. *Aristotle's Philosophy of Friendship*. New York: SUNY Press.



## **Biosemiotics joining its history**

***Ekaterina Velmezova***

University of Lausanne, Switzerland

However paradoxical it may seem, researches in the field of the history of any academic discipline at some point inevitably return ... to the present, to the corresponding discipline as such – and even to its future, to its “future history” (Favareau 2010a: 62). Donald Favareau positions himself primarily as a historian of biosemiotics<sup>19</sup> – he told me about this during our conversation that took place at the Gatherings in Biosemiotics 2017 which were held in Lausanne from 6 to 10 June 2017. At these Gatherings, Don organized a particular “symposium session” which was devoted to John Deely (1942–2017) “‘A sign is *what?*’: A John Deely memorial symposium”, in which, besides the organizer himself, Kalevi Kull (University of Tartu, Estonia), Myrdene Anderson (Purdue University, USA), Paul Cobley (Middlesex University, USA) and Gerard J. van den Broek (Leiden University, the Netherlands) participated. As it has been specified in the conference book of abstracts, “[i]n this session, a few of us who were close to John will attempt to honour his accomplishments in the way that he would have wanted us to most – i.e., by presenting, analysing, reconsidering and arguing about some of his most

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<sup>19</sup> *History of biosemiotics* could be defined as a field of research devoted to the development of knowledge, in the history of science and culture, about the production and interpretation of signs and codes in the biological realm, to the theoretical understanding of this development, to the analysis of theories and concepts of the genesis of biosemiotic thought in general, as well as of its particular aspects (traditions, currents, academic schools, etc.).

important and original ideas regarding the action of signs in life. The session will be held symposium style and we are hoping that all attendees to the Gatherings will join in the discussion” (Favareau, Copley, Kull, Anderson 2017)<sup>20</sup>. This “symposium session” had much success, provoking deep and very vivid interest among the Gatherings’ participants who, finally, hardly had enough time to finish the launched discussion: after the “Favareau symposium”, the discussion continued during the coffee-breaks and even after the end of the conference.

The Gatherings in Biosemiotics have been organized since 2001 and every Gathering has had its own, inimitable particularities. As to the Gatherings organized in Lausanne, they seem to have been special, taking into account the evident interest of both their participants and organizers in the history of several academic disciplines (including, first of all, biosemiotics). Besides Donald Favareau’s “Deely symposium”, a pre-conference day “Biosemiotics, biology and linguistics in their history” was held during the first day of the Gatherings in Lausanne<sup>21</sup>; in some other presentations, the questions of intellectual history were also discussed – at least, partly. Indeed, would it be possible to think about the current state and about the future investigations in biosemiotics forgetting completely such names as Jakob von Uexküll, Thomas A. Sebeok, Juri M. Lotman...?

The fact that, in biosemiotics, current research is closely connected with past research (which the programmes of all the Gatherings in Biosemiotics confirm in a very evident way) can be

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<sup>20</sup> Initially some other presentations had been planned within the framework of this session (which had also been planned in a more “traditional” way, as a sequence of papers) – in particular, those by Ted Baenziger (University of St. Thomas, Houston, USA), Frederik Stjernfelt (Aalborg University, Copenhagen, Denmark), Susan Petrilli (University of Bari Aldo Moro, Bari, Italy), Sara Cannizzaro (Middlesex University, London, UK), Jesper Hoffmeyer (University of Copenhagen, Denmark) and Augusto Ponzio (University of Bari Aldo Moro, Bari, Italy). Unfortunately, these scholars could not attend the Gatherings in Biosemiotics which took place this year in Lausanne.

<sup>21</sup> Another particularity of the 2017 Gatherings was the organisation, by Don, of a “symposium” as such: this format of work does not seem to be very common for such academic events as Gatherings in Biosemiotics (taking apart pre-conference events – days, workshops and seminars): as exceptions to this rule, let us mention, for example, the “Mini-symposium: Information and meaning in biology (acknowledging 100th anniversary from the birth of Gregory Bateson)” held during the 4th Gatherings in Prague in 2004 (Markoš 2012a: 90) and a “Group discussion on ‘How to define the term ‘meaning’ in biosemiotics?’” where Don performed as moderator during the 9th Gatherings in Prague in 2009 (Markoš 2012b: 110).

explained by the (relatively) young age of this discipline – in comparison, for instance, with some of its related fields of knowledge, such as biology or philosophy.

Together with Kalevi Kull and Luis Emilio Bruni, Don is known to have participated in all seventeen Gatherings in Biosemiotics that have already taken place. Therefore, in some ways, he represents the “living history” of present biosemiotic researches. Don’s papers presented during the Gatherings were both about theoretical questions of biosemiotics and about the history of this discipline. Allowing ourselves, once again, this (very conventional) division between history of biosemiotics and biosemiotics as such, among the papers from the first group (which were especially typical for the first years of Don’s participation in the Gatherings – but not only), there were topics such as “Beyond self and other: The neurosemiotic emergence of intersubjectivity” (Emmeche 2012a: 76), “Collapsing the wave function of meaning: The contextualizing resources of talk-in-interaction” (Kull 2012: 80), “Biosemiotic constructivism and the ethics of irreversibility” (Emmeche 2012b: 86), “Animal sensing, acting and knowing: Bridging the relations between brains, bodies and world” (Witzany 2012: 98), “Including absence” (Favareau 2012a: 182), “Introductory remarks” (Favareau 2013: 44), “The neural and extra-neural scaffolding of human cognition” (paper presented by Don Favareau in London in 2014), “The biosemiotic glossary project: Intentionality” (Favareau 2016). Don’s papers which dealt with the history of biosemiotics and which were presented at the Gatherings included, in particular, “*De anima* and *De interpretatione*: Aristotle on life and signs” (Heusden 2012: 102), “Celebrating a milestone in biosemiotics – but certainly not standing still” (Major 2012: 114). However, let us repeat again, current biosemiotic studies are closely connected with biosemiotics’ history (sometimes with its very recent history), and several of Don’s papers presented at the Gatherings do not allow us to distinguish clearly between them. It was the case, for instance, of his (somewhat) enigmatically entitled paper “Examining the vital signs of biosemiotics” (Favareau 2005), where he explained the aim of his presentation in the following way:

[...] I will take the opportunity this year to review some of the developments that have occurred under the aegis of *biosemiotics* since the convention of that first Gathering a mere four years ago; to examine whether or not we have yet come up with a unified program (or even a unified framework) for falsifiable empirical study; and to continue to pursue the question regarding how to ‘formalize’ biosemiotics from a

well-justified domain of inquiry into the kind of empirically testable research program that would validate its status within the rest of the scientific community. (*ibid.*)

The history of science becomes here intertwined with this science itself, and the same line of reasoning manifestly continues in Don's paper entitled "Examining the vital signs of biosemiotics in 2008", which – let us pay tribute to Don's sense of humour – ends with the following words:

[...] I will take the opportunity this year to review some of the developments that have occurred under the aegis of *biosemiotics* since the convention of that first Gatherings a mere eight years ago; to examine whether or not we have yet come up with a unified program (or even a unified framework) for falsifiable empirical study; and to continue to pursue the question regarding how to 'formalize' biosemiotics from a well-justified domain of inquiry into the kind of empirically testable research program that would validate its status within the rest of the scientific community (Favareau 2008)...

And a part of Don's abstract corresponding to his paper presented at the 11th Gatherings in Biosemiotics which were held in 2011 in New York runs as follows:

Having been part of this conference series' history from its beginning, I would like to take the opportunity this year to briefly review some of the developments that have occurred under the aegis of *biosemiotics* since the convention of that first Gatherings ten years ago, and to address some of the many misconceptions about their research project that they find themselves often having to clarify both to fellow scientists, as well as to fellow semioticians." (Favareau 2011)

Considering Don's interest even in the recent history of biosemiotics (and particularly in the history of Gatherings in Biosemiotics) and his active participation in these conferences as such, it was not a surprise to see that it was precisely him who has written the paper "Twelve years with the Gatherings in Biosemiotics (Favareau 2012b),

published in the book *Gatherings in Biosemiotics* issued for the 12th Gatherings in Tartu (Rattasepp, Bennett [eds.] 2012).

The fact that, for Don, the history of biosemiotics is closely connected with biosemiotics as such allows us to conclude that, in a way, the history of biosemiotics remains, for him, within the framework of biosemiotics, while he emphasizes at the same time the importance of studies in the history of biosemiotics for biosemiotics



itself. This position allows him, first of all, to avoid both the mistakes of the past in current biosemiotic research and “reinventing the wheel” (taking into consideration the existence of such “eternally interesting subjects” for biosemioticians as signs and their evolution, types and structure(s) of signs, etc.).

However it may be, even if biosemiotics is (relatively) young, it already has its history, and Don’s works precisely allow us to state this fact. Of course, even before Don’s works, there existed researches about one or another fragment of past investigations related to the study of signs and codes in life. And yet, Don was one of the first scholars who tried to comprehend and embrace the development of the science of signs in the biological realm in general, to propose a periodization of the development of biosemiotics (highlighting its main periods) and to describe the main trends in the development of biosemiotics. Let us refer here first of all to Don’s huge contribution to the study of the history of biosemiotics – the book *Essential Readings in Biosemiotics*, edited by him and published in 2010, containing the works of recognized classics of biosemiotics, such as Jakob von Uexküll, Charles Sanders Peirce, Charles Morris, Juri M. Lotman, Thomas A. Sebeok, Heini K. P. Hediger, Martin Krampen, Thure von Uexküll, Werner Geigges, Jörg Herrmann, Giorgio Prodi, René Thom, Myrdene Anderson, John Deely, Joseph Ransdell, Kalevi Kull, Friedrich S. Rothschild, Marcel Florkin, Gregory Bateson, Howard H. Pattee, Terrence Deacon, Jesper Hoffmeyer, Claus Emmeche, João Queiroz, Charbel El-Hani, Anton Markoš, Søren Brier, Günther Witzany, Marcello Barbieri... In the abstract summarizing the first chapter of this book (written by Don in person) it was indicated that

[t]he present chapter is intended to provide an introductory overview to the history of biosemiotics, contextualizing that history within and against the larger currents of philosophical and scientific thinking from which it has emerged. Accordingly, to explain the origins of the most 21st century endeavour requires effectively tracing [...] how the ‘sign’ concept appeared, was lost, and now must be painstakingly rediscovered and refined in science. In the course of the recounting this history, this chapter also introduces much of the conceptual theory underlying the project of biosemiotics, and is therefore intended to serve also as a kind of primer to the readings that appear in the rest of the volume. With this purpose in mind, this chapter consists of the successive examination of: (1) the history of the sign concept in pre-modernist science, (2) the history of the sign concept in modernist science, and (3) the biosemiotic attempt to develop a more useful sign concept for contemporary science. The newcomer to biosemiotics is

encouraged to read through this chapter (though lengthy and of necessity still incomplete) before proceeding to the rest of the volume. For only by going so will the disparate selections appearing herein reveal their common unity of purpose, and only within this larger historical context can be contemporary attempt to develop a naturalistic understanding of sign relations be properly evaluated and understood. (Favareau 2010a: 1)

Therefore, once again, the history of biosemiotics is connected here with the present of this discipline and even with its future: this detailed chapter with an impressive reference list (containing about 300 sources) ends up with sections on modern scholars (such as “Joining life science with sign science: Jesper Hoffmeyer”, pp. 47–51; “Marcello Barbieri: Not interpretation, but organic codes”, pp. 58–62), on conferences (“A diverse ecosystem of researchers: The Gatherings in Biosemiotics”, pp. 51–52), on the current state of biosemiotics (“Developments and challenges 2001–2010”, pp. 55–58) and, finally, on the future of the discipline (“Epilogue: On the future history of biosemiotics”, pp. 62–66).

Considering Don as one of the first professional historians of biosemiotics, it seems quite reasonable to ask, in the current text, which is written on the occasion of his jubilee, about how the history of biosemiotics could develop in the future? We can suggest that, with time, the history of biosemiotics can be (of course, not very strictly) divided into several directions, such as, for instance,

*historiography of biosemiotics*, supposing first of all the description of facts connected with particular persons, publications or institutions, work in the archives and with unpublished documents in general, etc.;

*historical epistemology of biosemiotics*, critically examining particular biosemiotic schools, trends and currents: their methods, their fundamental research principles and concepts, the results of their researches in general, in order to determine their origin(s), their value and their objective scope, etc. Within the framework of this trend, the application of the principle of “epistemological neutrality” would be particularly appreciated, presupposing to study, with due attention and respect, every “academic” theory of the past, independently of its current “value”<sup>22</sup>. Besides, this field would welcome questions about the

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<sup>22</sup> About this principle and its application to the history of linguistics cf., for instance, Auroux (1989: 16).

reasons of emergence of one or another biosemiotic theory at a particular moment of time (among other things, in connection with the development of other academic branches, etc.).

In addition, a particular periodical on the history of biosemiotics can be published in parallel with the current main biosemiotic periodical *Biosemiotics*, and a group for the study of the history of biosemiotics could be formed within the framework of the International Society for Biosemiotic Studies (interest in one or another fragment of biosemiotics' intellectual past could certainly echo the states of affairs in biosemiotics itself, as it has already been so with other academic disciplines – for instance, linguistics and its history) – especially because the number of those interested in biosemiotics seems to increase with every passing year<sup>23</sup>.

But, in any case, it would be particularly welcome if – as in the case of Don's own researches – the history of biosemiotics still remained in biosemiotics as such, inspiring biosemioticians to launch new research and to approach new perspectives in their academic work. Concluding this text, let us give an example of such an inspiration which we owe precisely to Don: the idea of the book *Biosemiotic Perspectives on Language and Linguistics* (Velmezova, Kull, Cowley [eds.], 2015) arose during the 12th Gatherings in Biosemiotics in Tartu (2012), after the reading of the above-mentioned review "Twelve years with the Gatherings in Biosemiotics" (Favareau 2012b): in this text Don mentioned very few linguists who had given talks in the Gatherings between 2001 and 2011 – Kull, Velmezova 2015: 1). As we have commented, "[e]ven if the choice of designations (are they 'linguists'? or 'philologists'? or maybe 'philosophers [of language]'?) can sometimes alter the interpretation of facts (*nomina sunt odiosa*), this rather insignificant rate of *linguists* interested in biosemiotics provoked not only the question about the possible reasons for this state of affairs, but also a wish to contribute to the improvement of this situation" (*ibid.*, p. 1-2), which inspired us to edit the book on biosemiotics and linguistics. In this way, the work of a historian of biosemiotics turned out to be a source of inspiration for biosemiotic research as such. As Don himself pointed out, one should consider the historical heritage of biosemiotics "not as a series of dogmatic pronouncements to be accepted or rejected, but as suggestions made in good faith and in full awareness of the enormity of the undertaking,

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<sup>23</sup> Cf. Don's remark about "the world's small but steadily growing population of 'biosemioticians'" (Favareau 2010b: v).

regarding how one *might* profitably go about starting to develop a scientifically accountable framework for the explanation and investigation of the ubiquitous presence of sign relations in the organization and interaction of biological systems” (Favareau 2010b: ix).

Thank you, Don!

## References

- Auroux, Sylvain 1989. Introduction. In: Auroux, Sylvain (ed.), *Histoire des idées linguistiques*, vol. 1. Liège: P. Mardaga, 13–35.
- Emmeche, Claus 2012a. The 1st Gatherings in Biosemiotics. Copenhagen, Denmark. May 24–27, 2001. In: Rattasepp, Bennett (eds.) 2012: 74–77.
- Emmeche, Claus 2012b. The 3rd Gatherings in Biosemiotics. Copenhagen, Denmark. July 11–14, 2003. In: Rattasepp, Bennett (eds.) 2012: 82–87.
- Favareau, Donald 2005. Examining the vital signs of biosemiotics. In: *Biosemiotics 2005. Gatherings in Biosemiotics 5. Urbino (Italy), 20–24 July 2005. Abstracts*. Urbino: Institute of Ecology and Environmental Biology; University of Urbino, 19.
- Favareau, Donald 2008. Examining the vital signs of biosemiotics in 2008. In: *8th Gathering in Biosemiotics – Syros 23–28 June 2008. Abstracts*. 24.
- Favareau, Donald 2010a. Introduction: An evolutionary history of biosemiotics. In: Favareau (ed.) 2010: 1–77.
- Favareau, Donald 2010b. Preface. In: Favareau (ed.) 2010: v–x.
- Favareau, Donald (ed.) 2010. *Essential Readings in Biosemiotics: Anthology and Commentary*. (Biosemiotics 3.) Dordrecht *et al.*: Springer.
- Favareau, Donald 2011. Biosemiotics: What it is, what it isn’t, and why we’re here. In: *The Eleventh Annual International Gathering in Biosemiotics. June 21 to June 26, 2011. Program*. 19.
- Favareau, Donald 2012a. Including absence. In: Rattasepp, Bennett (eds.) 2012: 182–183.
- Favareau, Donald 2012b. Twelve years with the Gatherings in Biosemiotics. In: Rattasepp, Bennett (eds.) 2012: 64–72.
- Favareau, Donald 2013. Introductory remarks. In: *Thirteen Annual Gathering in Biosemiotics. June 4 to June 8, 2013. Rosignano Marittimo*, 44–48.
- Favareau, Donald 2016. The biosemiotic glossary project: intentionality. In: Švorcová, Jana; Kurismaa, Andres (eds.), *Sixteenth Annual Gatherings in Biosemiotics. July 4 to July 8, 2016. Prague*. Prague: Faculty of Science Charles University, 22.
- Favareau, Donald; Copley, Paul; Kull, Kalevi; Anderson, Myrdene 2017. “A sign is *what?*”: A John Deely memorial symposium. In: Velmezova, Ekaterina; Moret, Sébastien; Isanina, Anna (eds.), *Gatherings in Biosemiotics 2017*. Lausanne: University of Lausanne, 64–65.

- Heusden, Barend Van 2012. The 7th Gatherings in Biosemiotics. Groningen, the Netherlands. June 6–9, 2007. In Rattasepp, Bennett (eds.) 2012: 101–104.
- Kull, Kalevi 2012. The 2nd Gatherings in Biosemiotics. Tartu–Puhtu–Tallinn, Estonia. June 14–17, 2001. In: Rattasepp, Bennett (eds.) 2012: 78–81.
- Kull, Kalevi; Velmezova, Ekaterina 2015. Language, linguistics: Life, biosemiotics... In: Velmezova, Kull, Cowley (eds.) 2015: 1–10.
- Major, João Carlos 2012. The 10th Gatherings in Biosemiotics. Braga, Portugal. June 22–27, 2010. In: Rattasepp, Bennett (eds.) 2012: 113–116.
- Markoš, Anton 2012a. The 4th Gatherings in Biosemiotics. Prague, Czech Republic. July 1–5, 2004. In Rattasepp, Bennett (eds.) 2012: 88–91.
- Markoš, Anton 2012b. The 9th Gatherings in Biosemiotics. Prague, Czech Republic. June 30 – July 5, 2009. In: Rattasepp, Bennett (eds.) 2012: 109–112.
- Rattasepp, Silver; Bennett, Tyler (eds.) 2012. *Gatherings in Biosemiotics*. (Tartu Semiotics Library 11.) Tartu: University of Tartu Press.
- Velmezova, Ekaterina; Kull, Kalevi; Cowley, Stephen J. (eds.), *Biosemiotic Perspectives on Language and Linguistics*. (Biosemiotics 13.) Cham et al.: Springer.
- Witzany, Günther 2012. The 6th Gatherings in Biosemiotics. Salzburg, Austria. July 5–9, 2006. In: Rattasepp, Bennett (eds.) 2012: 96–100.



## ***Essay sur le Don: An aphorism offered for Don Favareau's 60th birthday***

***Frederik Stjernfelt***

University of Copenhagen, Denmark

In social anthropology, Marcel Mauss' classic *Essai sur le don* – an essay on gifts – occupies a special position. It describes a number of gift-giving practices in different non-modern societies, emphasizing the difference of such practices to modern rational, egocentric, economic exchanges. Famous are the practices of the Kwakiutl of British Columbia where exchange between tribes and their chiefs would oblige the recipients to pay back with a more excessive gift, possibly leading a chief in debt to donate excessive amounts of boats, artifacts, weapons, women in order to trump his competitor – even, in some cases, to simply destroy large arrays of such goods in the view of the “creditor” tribe leadership, leading to complete bankruptcy of his tribe. Obviously, such gift-giving is intimately connected to honor issues – it being perceived as fatally disgracing to be unable to top the gift received from the other party. Gift-giving practices like these lead Mauss himself to see the occurrence of accumulated wealth as a mere phase in the ongoing circulation of goods – and, in the conclusion of the book, to support contemporary Social Democratic ideas of redistribution. Later, such ideas have not ceased to inspire utopian political alternatives, from Georges Bataille and Jean Baudrillard to David Graeber, utopias of alternative wealth distribution or exchange patterns involving voluntary gift-giving in a central position. Mauss, however, simultaneously emphasized that there could be no sharp defining borderline between gift-giving and price-driven market-based economical exchange. Rather, the two form phases of a

continuum – all gift-giving potentially referring to future retributions in the other direction, so that the degree of certainty of future paying-back becomes an important variable, a low degree characterizing gift-giving, a high degree characterizing economic contractual transactions – but with all sorts of intermediary exchanges possible. Given the obligation to pay back, few gifts are really voluntary in any strong sense. Similarly, the degree of disgrace connected to unpaid debt forms another variable with very different possible values across individuals as well as groups. In this sense, the upshot of Marcel Mauss' famous work is not so much the idea of a completely different way of engaging in the circulation and exchange of goods than the standard rational-man, capitalist conception – but, rather, that this particular conception forms a specific variant or phase in a broader field of exchange where one and the same person may behave as a stingy miser in some exchanges and as a benevolent Maecenas in other contexts. The former may even form the necessary precondition for the latter: you have got to save in order to be able to spend. It is also the fact that even the most rude capitalism has in no way been able to eradicate gift-giving practices of many different sorts – making rational man a characteristic of certain behaviours rather than of human beings as such.

Given the fact, however, that human exchanges come in a huge variety of forms, the inevitable biosemiotic question will address the role of gifts in non-human biology. Are individual animals taken to be completely egotistic utility-maximisers, or does the broader continuum of exchange variants hold for animal communication as well? It has long been believed that it is the courtship rituals of bower birds that determine the extensive and work-demanding decoration of elaborate gardens around the nest by the courting male in order to impress the female – a sort of equivalent to human courtship practices of offering flowers, wine, or boxes of chocolate in the hope of tempting or persuading a potential partner to future payback. Comparative studies, however, seem to show that such practices are not merely metaphorically similar to human courtship, nor are they indeed rare in the animal kingdom. Sara Lewis and Adam South have, in a recent paper, gathered evidence of such “nuptial gift” practices across an impressive variety of species. It may be found among many different insects, but also in arachnoids, snails, earthworms, salamanders, squid, and birds – even if it seems to be rarer among mammals. Typical examples of such gifts include elaborate “packages” containing semen – so-called spermatophores – where the package is constructed from edible substances such as proteins or carbohydrates,



secreted by the courting male for the consumption by the female. Lewis and South sum up: "In species widely distributed across the animal kingdom, males transfer many different non-gametic materials to females during courtship and mating. Such materials can include lipids, carbohydrates, proteins, peptides, amino acids, uric acid, minerals, water, anti-predator defensive compounds, anti-aphrodisiac pheromones, and neuroendocrine modulators of recipient physiology" (Lewis, South 2012: 53). It is almost touching here to retrieve analogues to human courtship such as carbohydrates (the box of chocolates) or drinks offered to the female mating candidate. Such substances do not have to be excreted by the male but may also take the shape of prey caught by the male, passed on to the female object of courtship.

Not unlike the generalization of Maussian gift-giving, the authors do not stop at the prototypical gift-like spermatophore present with edible wrappings but take care to generalize to cases where it is the spermatic fluid that may contain valuable substances for the female. They also, however, do not stop at the assumption that the gift should somehow be beneficial for the recipient. In proverbial English, as they say, "[...] the term 'gift' generally implies some benefit for the recipient" (Lewis, South 2012: 56). This is certainly correct, but one need not look farther than Danish or German to find the same word with the same root ("gift") taking the alternative meaning of "poison". Thus, the authors realize that the generalized nuptial gift may also include cases like that of snails where the male injects arrow-like objects into the female containing substances fit to reduce female hesitation to mating or selectivity between male contenders (as snails are hermaphrodites, "male" and "female" should here be read in the roles of sending and receiving semen, respectively, rather than that of fixed individuals). In such cases, the gift is rather like that of poisoning a sexual target's drink with some sort of sedative in order to weaken their judgment or even anaesthetize them completely. Other cases may include gifts passing in the opposite, female-to-male direction, so that giving is not necessarily the prerogative of males. With such generalizations, Lewis and South reach a more general definition as follows: "*Nuptial gifts are materials beyond the obligatory gametes that are transferred from one sex to another during courtship or mating*" (Lewis, South 2012: 56). Maussian reciprocity is not mentioned here; it probably goes without saying that the transfer of materials may ease, as a virtual future counter-gift, later phases of the courtship or mating process. In an interesting part of their article, Lewis and South argue for nuptial gifts as the result of evolutionary processes where the

whole gender relation, including behavior roles and even the body shapes of the two sexes, may change as the gift-giving process might increase mating possibility and weaken, for example, female flight reactions.

From a biosemiotic perspective, nuptial gifts undoubtedly contain semiotic aspects which may be more and less developed and are probably never completely absent. Nuptial gifts function as a sign that the male is willing to invest much energy, time, even bodily substances, in the process and thus in a certain sense confirm his seriousness. A spermatophore measuring up to 1/3 of male body weight can not be excreted frequently. The female, in any case, will tend to prefer the male which is able to come up with the best, largest or most efficiently functioning gift. An important corollary here is that, just like in the Maussian case, a continuum seems to subsist between gifts which are really helpful for the metabolism or the egg-laying process of the female, at one end, and gifts which cynically sedates her at the other – anthropocentrically expressible in terms of “altruistic” gifts beneficial for the loved one and purely “egotist” gifts sedating or even harming the loved one in order to weaken their resistance. As in Maussian exchange, animal gifts seem to involve both utopian mutualism and cynical exploitation as possible semiotic variants.

As I offer these scattered thoughts to my old friend Don<sup>24</sup>, of course, I am not really certain whether he is likely to find them helpful or sedative, stinging or overpowering, boring or downright damaging, nor whether he will be caught by an obligation to reciprocate. But this ambiguity seems to be an ontological condition of the biology of gifts.

## References

- Lewis, Sara; South, Adam 2012. The evolution of animal nuptial gifts. *Advances in the Study of Behavior* 44: 53–96.
- Mauss, Marcel 2007 [1923–1924]. *Essai sur le don: Forme et raison de l'échange dans les sociétés archaïques*. Paris: PUF. [Originally 1923–1924 in *l'Année Sociologique*.]

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<sup>24</sup> Don Favarone, of course, is now one of the godfathers of biosemiotics. So I fear he will reciprocate with an offer I can't refuse.

## **Ten years of cyberpunk, information and clay pipes**

***Sara Cannizzaro***

Middlesex University, London, UK

The first time I met Don Favareau, I was at the 9th World Congress of IASS/AIS held at the University of Helsinki (11-17 June 2007). I was taking part in a panel organised by Paul Cobley on “Applying biosemiotics: understanding and misunderstanding culture” It was barely a few months since I had started my PhD, and I was at my very first conference and was dreading it. My presentation was titled ‘Illustrating the Cyberpunk Virtual Community through Modelling System Theory’. Here I was, standing in front of an intimidating crowd of international scholars trying to show, through the help of nothing less than Sebeok and Danesi’s Modelling Systems Theory (2000), how Italian ravers and hackers come together to form a cyberpunk-inspired community well in the 2000s. During my trembling speech, I noticed a friendly presence from the public, listening carefully to what I had to say, head slightly tilted sideways as we instinctively do as we focus, and sometimes nodding too, in what I took as a reassuring sign of interest. If someone was taking my speech seriously, then, I must not be too far off track, I thought.

This friendly presence was later introduced to me as Don Favareau. That was the first of many times in which Don provided me with some much needed encouragement through my PhD studies, and beyond.

Don’s conference activities made a direct contribution to my studies and helped me develop my thought. The beginning of July 2009 saw the getting together of biologists and semioticians (and

many more!) at the 9th Annual Gathering in Biosemiotics at Charles University in Prague. This wasn't my first conference anymore, but it was my very first Gatherings in Biosemiotics and coming from a very tame Media department, it was a baptism of fire. Amongst other very lively debates, the event in fact hosted a fascinating debate on the nature of meaning arising out of twenty very different definitions collected from the very varied conference delegates. The debate, artfully chaired by Don, was unexpectedly heated and fuelled by the divide between code-based semiotics and interpretational semiotics which I was witnessing first-hand for the first time. It did not only teach me that academics can get very red in the face over theoretical issues, but also that the variety of perspectives on meaning in biosemiotics was much broader than what I had expected. I had to know more, I decided, and I spent the next few years of my doctoral studies disentangling (or trying to) the relationship between information and meaning. This interest later on informed my articles 'On form, function and meaning: Working out the foundations of biosemiotics' (2010) and 'Where did information go? Reflections on the logical status of information in a cybernetic and semiotic perspective' (2013).

Don's published work too played a key part in my thesis. For a start, Favareau's *Essential Readings Biosemiotics: Anthology and Commentary* (2010) provided so many seminal biosemiotic (and proto-biosemiotic) sources in one single place and helped me feed my literature review chapter. Secondly, his interest in the evolutionary history of biosemiotics resonated also with my historical intent to "produce a new understanding of biosemiotics from the enhanced vantage point of the *history* of cybernetics" (Cannizzaro 2012). Thirdly, in the introduction to my thesis, I noted how the lack of contextualisation of biosemiotics within a systemic and cybernetic framework impeded the implementation of biosemiotics as a form of cultural analysis. At the time of writing that introduction, I could see biosemiotics proliferating in relation to the sciences (for example, its 'flagship' journal and book series appear with the hard sciences publisher Springer), but not being as fast at proliferating in the humanities and in the context of cultural analysis. In this respect, I cited Favareau (2011: 46) stating that

Interestingly enough [...] it is not "semioticians" *per se* that one finds attending the conferences and penning the journal articles in the field called biosemiotics today, but molecular biologists, embryologists, philologists of science, zoologists, roboticists, neurobiologists,

psychologists and dynamic systems theorists instead. [...] For it turned out that the nerve that was ready to be hit by the promise of a scientifically informed biosemiotics was not at all one that was calling out for excitation in the academic world of semiotics (with a few conspicuous exceptions of course [...]).

I took the chance offered by Don here, to argue in that introduction, that “the current project seeks to situate itself as one such exception, and, as well as seeking to contribute to biosemiotics by means of the elaboration of its foundations, it will also seek to contribute to semiotic analysis of culture by means of exploring the implications that the thesis ‘Biosemiotics as Systems Theory’ bears for a new form of cultural analysis” (2012). So, overall, Don’s historical work in biosemiotics was a milestone in terms of helping me justify the need for my investigation.

Relating to history, but outside of academia, Don knows very well my passion for amateur archaeology. As a modern version of the Victorian pauper ‘mudlarker’, I have learnt to enjoy scouring the river Thames’ mud at low tide looking for once waste items and today items of interest, from prehistoric flint flakes, to 18th century dockers’ clay pipes, to Victorian beer bottles. I often blab on about this passion, and argue about the semiotic nature of such an activity – what is amateur archaeology if not reading signs of history based on part-knowledge, part-intuition, part-wishful thinking, so, perhaps, in terms of information, abduction and teleology? As a truly interdisciplinary scholar that he is, during a more recent meeting at the Gatherings in Biosemiotics 2014 (Middlesex University, 30 June to 4 July), Don encouraged me to bring these musings to the academic community one day.

Perhaps I will write about the semiotics of discovery in amateur archaeology soon. For the time being, and as I realise while writing this piece as of June 2017, it has been exactly 10 years since I have first met Don at that IASS meeting in June 2007, I can only express how indebted I am to him for his ongoing encouragement, intellectual inspiration and continuing friendship.

## References

- Cannizzaro, Sara 2010. On form, function and meaning: Working out the foundations of biosemiotics. *Hortus Semioticus* 6: 40–52.
- Cannizzaro, Sara 2012. *Biosemiotics as Systems Theory: An Investigation into Biosemiotics as the Grounding for a New Form of Cultural Analysis*. Ph.D. thesis, London Metropolitan University, London, UK.

- Cannizzaro, Sara 2013. Where did information go? Reflections on the logical status of information in a cybernetic and semiotic perspective. *Biosemiotics* 6(1): 105-123.
- Favareau, Donald (ed.) 2010e. *Essential Readings in Biosemiotics: Anthology and Commentary*. (Biosemiotics 3.) Dordrecht: Springer.
- Sebeok, Thomas A.; Danesi, Marcel 2000. *The Forms of Meaning: Modeling Systems Theory and Semiotic Analysis*. New York: Mouton de Gruyter.

## **Don: the glue of biosemiotics**

***Luis Emilio Bruni***

Aalborg University Copenhagen, Denmark

By its very interdisciplinary nature and by the embeddedness of its subject matter, biosemiotics has produced a multifarious corpus of literature that deals with many biological, cognitive and cultural levels, and with a great variety of ontological and epistemological approaches. Very few in this field have the kind of critical grasp over such diversity that Donald Favareau has. I refer not only to what has been written, said or discussed in biosemiotics but also how the history of philosophy can be considered the rise and fall of the negligence of “information”, “sign relations”, and “mind phenomena” in the study of the living world in Western tradition.

It is therefore no surprise that the most complete and exhaustive collection of biosemiotic perspectives is Don’s *Essential Readings in Biosemiotics* (2010a), a comprehensive volume starting with the introductory chapter titled ‘An Evolutionary History of Biosemiotics’ (2010b) where Don skilfully traces the roots of biosemiotics throughout the many cultural crossroads from antiquity, through the Middle Ages and into the dichotomies of modernity, to arrive at the twentieth-century precursors. Additionally, this anthology includes an extensive collection of foundational texts by the main authors of the field, commented on and put into historical perspective by Don’s exceptional insight. This immense pattern-connecting work has not been achieved in detriment to Don advancing his own perspective and his own range of problems in the realm of biosemiotics. All this seems to be a lot to achieve – but it is not all. Don has also been the diplomat, the promoter, the conflict mediator, the conciliator and, in

a sense, the historian of biosemiotics, given the central importance of his active socializing activities in making biosemiotics a cohesive growing field.

We both met as graduate students in the first Gatherings in Biosemiotics, “on an overcast May morning in 2001” and together with one of our mentors ever since, Kalevi Kull, we have had the pleasure of being the only three individuals to attend all the seventeen Gatherings in Biosemiotics. It was in that overcast May morning in 2001 that this “American graduate student pursuing a joint degree in philosophy of mind and the neurobiology of language”<sup>25</sup> and who “had been struggling for years to find an explanation of biological mindedness”<sup>26</sup> surprised us all with his performance on mirror neurons and intersubjectivity, irreverently standing up on the front-table of the podium of the very room in which Wilhelm Johannsen first introduced the word “gene” into the discourse of science in 1909. A stand-up biosemiotician was born. His sparkling intellect and his deep empathic connection to humanity and nature make Don deserve the title “the glue of biosemiotics”.

## References

- Favareau, Donald (ed.) 2010a. *Essential Readings in Biosemiotics: Anthology and Commentary*. (Biosemiotics 3.) Dordrecht: Springer.
- Favareau, Donald 2010b. Introduction: An evolutionary history of biosemiotics. In: Favareau 2010a: 1–77.
- Favareau, Donald 2012. Twelve years with the Gatherings in Biosemiotics. In: Rattasepp, Silver; Bennett, Tyler (eds.), *Gatherings in Biosemiotics*. (Tartu Semiotics Library 11.) Tartu: University of Tartu Press, 64–72.

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<sup>25</sup> Favareau 2012: 64.

<sup>26</sup> *Ibidem*.



## **Show your teeth – but not to the apes**

***Tommi Vehkavaara***

University of Tampere, Finland

One of the major interests of traditional humanists has been to prove the superiority and privileged value of man over nature by distinguishing specifically human nature from those characters of living beings that human and other animals share. The suggested distinguishing features can be found in the literature from the times of Plato and Aristotle onwards, and they are numerous: reason or rationality, morality, spirituality, religious beliefs or rituals, intentionality, meaning making, language use, symbol use, cultural diversity, ability to carry out deception or lies, warfare, ability to make arithmetical calculations, an upright position, tool use, tool making, ability to engage in hypostatic abstractions, etc. Nevertheless, most of them have appeared more or less problematic (except perhaps one of the most recent suggested by Frederik Stjernfelt in 2014, the ability to engage in hypostatic abstractions). Either some species of animals have been found relatively capable of those cognitive operations that are thought to be a human speciality, or a supposed distinguishing feature has appeared too multifarious and vague in order to function as such.

One of the most appealing aspects of biosemiotics for me has been its break from this tradition to look for the proof of human excellence. The aim and focus has rather been in the search for *continuity* and *connecting features* that would (re-)unite human minds to nature, both to human bodily nature and to non-human nature, to all the living beings. This was probably also one of the attractive factor that Don Favareau found when he got himself acquainted to biosemiotics and

introduced himself in the 1<sup>st</sup> Gatherings in Biosemiotics in Copenhagen May 2001 (Favareau 2012). Certainly, he has attended every one of these annual meetings ever since, and in these meetings I have learned to know Don, though I must regrettably confess that I have not been so conscientious as Don (besides Don, I suppose only Kalevi Kull and Luis Bruni have attended every Gatherings). My own entry to biosemiotics was a few years earlier in 1997–1998, when I first found the seminal papers of Claus Emmeche and Jesper Hoffmeyer (1991) and then started to study Peirce. Still, for me, likewise for Don, there were these Gatherings and their friendly, democratic, and the seemingly new atmosphere that were the beginning of the research community which we eagerly wished to join (naturally, we two were not the only ones). Ever since, Don has been one of the most loyal students, proponents, and ambassadors of the core ideas of the Copenhagen–Tartu school of biosemiotics without excluding connections to the other approaches and traditions as his massive Anthology and Commentary (Favareau 2010) testifies. I do not know whether Don adopted his friendly connecting, communicating, and negotiating character from biosemiotics, or whether such a way to act is characteristic of Don in any case. It has nevertheless a been happy coincidence for the biosemiotic community that we have had Don in introducing newcomers, politely trying to make other people work together, and doing all such human-webmastering.

Despite the fact that the question of human nature is not so central to biosemiotics as to more anthropocentric approaches, I would like to add one more suggestion to the long and probably endless list of failures to find distinguishing features of humanity. The reason is that my first impressions of Don were a germ of it. I must confess to my shame that in the first Gatherings (as far I can remember) Don's appearance made me somewhat reserved, almost suspicious, despite his friendliness, intelligence, and all the positive characters that were already then apparent and that I have later learned to appreciate and love. What I can remember about my first impressions of Don were a wide American style smile and machinegun talk with a rapid entertaining slideshow. At that time, 16 years ago, when I was still internationally rather inexperienced, and despite the fact that Don was talking about the interesting topic (on mirror neurons and something), this was a shocking presentation to me, a demonstration of rhetoric and professional predominance of American university education, and I did not quite understand my emotional reactions that were (perhaps) the mixture of admiration, envy, and repression. I found the explanation a year (or perhaps three

years) later from Alexei Turovski's talk on chimpanzees (or apes in general) in the 2nd (or 4th) Gatherings. Turovski demonstrated that apes do smile, but if you smile back to an ape, you should never show your upper teeth. Then I realized that this could explain my reserve – I was still only half-way down from the trees, still a culturally prejudiced backwoodsman from central Finland whose forests have been cut down (yes, the huge logging areas are the sign of the new bio-based economy that is promised to save the world). Don, instead, belonged to the other species with the humanized culture, open mind, and a will to connecting people. I think that I have progressed at least a bit now, though I am still unable to follow machinegun talks. At least I can more freely show my teeth and interpret wide smiles more often as positive signs. Thus, a new definition of human being could be following: human being is an animal who is capable of learning that showing your upper teeth can be a friendly gesture and not necessarily or typically a sign of aggression.

Happy 60th birthday Don, my beloved friend.

## References

- Favareau, Donald (ed.) 2010. *Essential Readings in Biosemiotics: Anthology and Commentary*. (Biosemiotics 3.) Dordrecht: Springer.
- Favareau, Donald 2012. Twelve years with the Gatherings in Biosemiotics. In: Rattasepp, Silver; Bennett, Tyler (eds.), *Gatherings in Biosemiotics*. (Tartu Semiotics Library 11.) Tartu: University of Tartu Press, 64–72.
- Hoffmeyer, Jesper; Emmeche, Claus 1991. Code-duality and the semiotics of nature. In: Anderson, Myrdene; Merrell, Floyd (eds.), *On Semiotic Modeling*. Berlin: Mouton de Gruyter, 117–166.
- Stjernfelt, Fredrik 2014. *Natural Propositions: The Actuality of Peirce's Doctrine of Dicisigns*. Boston: Docent Press.



# **Keeping biosemiotics clear: Intertwining intuition and history**

***Claudio Julio Rodríguez Higuera***

University of Tartu, Estonia

That biosemiotics has a history to be narrated derives in part from the fact that biosemiotics has Don Favareau as one of its historians. But history itself is one messy endeavour. Favareau's contribution, then, is twofold – not only has he documented the history of biosemiotics as an institution and an enterprise, but he has made sense of it in a philosophically clear way. Biosemioticians may be forgiven for taking this for granted, but it is because of such clarity that we are able to speak of so many topics in the first place.

Semiotic concepts have a way of playing with their meanings. What we mean when we use the concept of the sign is relative to whom we are addressing. In that respect, the biosemiotic sign may resemble the hallmark of Saussurean thought, but it is not quite there. The distinction between human and non-human meaning-making becomes all the more apparent when we transplant concepts from one side of the field to another. In that way, speaking of the content of a sign does not give us a good picture of a biosemiotic treatment of non-human experience or perception. But the history of semiotics can help us overcome the sometimes perplexing semantic issues we may find by admitting that conceptual change goes hand-in-hand with the analysis of the concepts we use and the same problems they cause. In framing the limitations of the linguistic model that predates the existence of biosemiotics, we can understand that one of the great sources for current biosemiotic models comes from moving beyond

these same limitations imposed by the study of human meaning-making (Favareau, Kull 2015: 17); but doing so requires us to take some careful steps regarding how we break down concepts we have used before. In a rather theatrical way, signs become strange objects when we do not account for the possibility of reports from the subjects that take part in sign action. Yet, the way semiotic thought has changed across the years we document as belonging to the project of biosemiotics makes it seem necessary, perhaps even inescapable, to avoid mechanistic descriptions of the intuitively non-mechanic.

Are our intuitions based on solid grounds? I would argue they are; but biosemiotic intuition deserves its own brief excursus. We will take a quick look at the way the history of the discipline, and how this history is made sense of, has an impact on our intuitions as biosemioticians.

### **Biosemiotic intuitions**

Looking from outside, it seems hard to make the case that biosemiotic premises are intuitive for the non-initiated. For one, extending signification to as meaningful for non-humans is already a bit of an ordeal. And even if we allow ourselves to accept that other mammals have some meaning-making capacities, there is still a big gap between that and reaching the fundamental issues of a naturalized semiosis in its full scope. It seems, then, that common sense intuitions and biosemiotic intuitions may overlap in some areas, while differing at their core. After all, the space of experience between, say, a dog and a cell, seems unfathomable.

In making sense of the intellectual history of biosemiotics it is not enough to state the arguments that make concepts such as *Umwelt* both valid and useful. Instead, we need to understand the debates surrounding signification, the building block of semiotic research, to see how we got here at all.

Giving biosemiotics its own body and history is no easy task. It implies understanding the history of semiotics *without* semiotics and the framing of philosophical and scientific history *through* semiotics. Favareau, excelling in this task, has given us a clear picture, allowing us to wonder how it came to be that we can talk of biosemiotic signs at all. The explanatory conflation of “one example of the superordinate category of ‘sign relations’ into the definition of the category itself” (Favareau 2010: 10) when it comes to assuming that signs are mediated through human mental experience, is the philosophical fuse

for biosemiotics as it is now. The tension between the ancient received view and what will become the biosemiotic perspective grows as the privilege of human experience becomes less scientific and more dogmatic – but one is dependent on the other. That is, the biosemiotic perspective is, in itself, historically motivated as a reaction to the dominance of the view that privileges human sign action over other theoretical possibilities. Here, the understanding of ‘science without semiotics’ is what becomes more interesting when contrasting the points of view we have talked about before. What do our intuitions say about the experience of signification for a dog? They partly depend on our own grounds for asking the question. If we have experienced canine companionship closely, there is a fair chance we will add some of that experience to our intuition about how a dog copes with its surroundings. If, on the other hand, we start with the notion that, for a being to have experience it is necessary that it counts with a specific *vitality*, and we cannot attest to that in the case of a dachshund, then our intuitions may go the other way. That is precisely why learning how to frame the history of biosemiotics is absolutely necessary for doing biosemiotics in the first place. The set of historical conditions that has preceded both the predominant mechanistic view of biology and the biosemiotic view are not independent contrasts, but different branches of the development of our philosophical and scientific work.

### **Historical intuitions**

If biosemiotic intuitions are grounded upon certain historical intuitions as they seem to be, we may be more inclined to ask whether our intuitions are correct on the basis of thinking how wrong opposite intuitions have turned out (if they happen to be wrong at all). The internal contradictions posed by the different turns in our intuitions and experiences (that a dachshund can have a semblance of reason vs. that it is but a mechanical object of affection, for instance) do not emerge in a vacuum. Instead, the scientifically-minded individual will set these intuitions against a specific backdrop and try to resolve the matter by observing the facts. Favareau points out, with tremendous clarity, the following:

- (1) the natural world is full of subjective agents, (2) that the natural world itself must have produced these subjective agents once one rules out the possibility of supernaturalism as a legitimate scientific explanation, and

(3) that it is the subjective experiences of these agents that lead them to act upon the natural world in ways that materially *change* that world (and in so doing, change the substrate that world then becomes for the evolution of subsequent subjective agents...) (Favareau 2010: 33)

We certainly may take (1) to be one – if not the founding – intuition of biosemiotics. How do we know that we are surrounded by subjective agents, though? Well, for one, we may readily (or charitably) assume that other humans are, indeed, subjective agents. A top-down approach, here, works best given what we know from evolution; and while skepticism is not absolutely out of the question, the positive version of the argument has enough strength to embody the inquisitive nature of semiotics.

Up to this point, I think it is clear that offering an orderly account of how biosemiotics came to be translates into theoretical assertions about where we stand. It is only fair to state that “the job of biosemiotics right now is to articulate its intuitions about sign processes in biology such that they become accepted as legitimate scientific to ask” (Favareau 2010: 64), but what is left hanging is how to make sense of the potential correctness of biosemiotic intuitions themselves. Interestingly enough, we can look at our own intuitions as signs of some type. The awareness of the scaffolding process in sign evolution is something of a logical path to take for examining if our biosemiotic intuitions are both well formed and not visibly wrong. Indeed, this metasemiotic exercise is what makes assertions of the critical type and of the creative type possible when talking about the absences of non-biosemiotic science and the potential of meaning within science. Biosemiotics, according to Favareau, realizes that semiotic scaffolding is what structures and links meaning-making across spheres (Favareau 2015: 243), but the realization of this realization entails what is so fundamentally relevant in Don’s work within and for biosemiotics. Following in the steps of the *semiotic animal* (Deely 2003; Rattasepp, Kull 2016), biosemioticians can identify that their intuitions are defined not only as a counter-model to non-biosemiotic intuitions, but also as symbolically motivated, registering the semiotic scaffold as part of their formulation (or so we would like to believe). This means that biosemiotic intuitions draw from the same sources as non-biosemiotic intuitions, with a number of modifications based on alternative premises, such as Peircean metaphysics. Instead of preaching to the choir though, what must be stated is that biosemiotics is as philosophically motivated as it is scientifically informed. Donald Favareau has made it increasingly clear through his



work that biosemiotics depends on its history and the analysis of its premises, and so, when he argues that symbols are grounded “in the emergent *structure* of the immaterial relations that constitute the metaphorical [...] planks and girders of the semiotic scaffold by which we human beings know the world” (Favareau 2015: 244), we get a clear example of a biosemiotic intuition being cashed out through metasemiotic analysis.

### **Certainty about intuitions**

The work of biosemioticians is not cut out for them. The dense path ahead is full of new questions and perhaps even some answers. Yet, as if a self-declared backwoodsman had helped us, we have had a fortunate beginning in opening the path itself. In forming biosemiotic intuitions, we must not forget where they come from, nor the form they take. A biosemiotic intuition then, if we define it as ‘the sort of intuition about meaning informed by the understanding of sign-usage as not limited to the human species’, can be correct if we allow ourselves to think of its ramifications and the significance of what has come before the intuition itself occurred. The best way, then, to make sure our biosemiotic intuitions are correct, is to make sure they are clear. Don Favareau’s way to clarity has been to take the road of metasemiotic thought. And that road has made biosemiotics a much stronger discipline.

### **References**

- Deely, John 2005. The semiotic animal. In: Williamson, Rodney; Sbrocchi, Leonard G.; Deely, John (eds.), *Semiotics 2003: “Semiotics and National Identity”*. New York, Ottawa, Toronto: Legas, 111–116.
- Favareau, Donald 2010. Introduction: An evolutionary history of biosemiotics. In: Favareau, Donald (ed.) 2010. *Essential Readings in Biosemiotics: Anthology and Commentary*. (Biosemiotics 3.) Dordrecht: Springer, 1–77.
- Favareau, Donald 2015. Symbols are grounded not in things, but in scaffolded relations and their semiotic constraints (or how the referential generality of symbol scaffolding grows minds). *Biosemiotics* 8(2): 235–255.
- Favareau, Donald; Kull, Kalevi 2015. On biosemiotics and its possible relevance to linguistics. In: Velmezova, Ekaterina; Kull, Kalevi; Cowley, Stephen (eds.), *Biosemiotic Perspectives on Language and Linguistics*. (Biosemiotics 13.) Cham: Springer, 13–28.
- Rattasepp, Silver; Kull, Kalevi 2016. The semiotic species: Deelying with animals in philosophy. *The American Journal of Semiotics* 32(1/4): 35–48.



## **Don Favareau – congenor**

***Paul Cobley***

Middlesex University, UK

Academic life has major potential for isolation. Based on the ascetic model of the priesthood, much of it is expected to be carried out alone, as individual pensive activity. Certainly, that is one impression given by the stress on independent learning at undergraduate level. For the postgraduate, particularly at PhD level, the isolating tendency is even greater. There is seldom the support of a like-minded community of peers. Moreover, and despite initiatives to ameliorate this in recent years, the PhD researcher is often reliant on a one-to-one mentor relationship with a supervisor, a relationship which can only yield variable degrees of nurture. Once the fledged researcher is able to join a research community, if such exists that is compatible with that researcher's disposition and interests, isolationism remains a constant threat. If that community is truly international, then even in an age of connectedness as offered by the time-space compression of contemporary media the researcher has to go back to their own institution after a conference or after a research collaboration. That institution may contain no researchers in cognate areas and is, in fact, likely to contain many colleagues who are hostile to those areas.

While these observations might be considered a little dark, it should be emphasized that their import in respect of semiotics needs to be multiplied. Semiotics has never fitted into academic prescriptions and organisation. As John Deely noted during a panel on the topic of postmodernism at the 7th Congress of the IASS in 1999, semiotics has *always* been marginal, for millennia, tending to isolate

its researchers. Two years later, Thomas A. Sebeok (2001: 8; cf Sebeok 1978) wrote,

Whether semiotics is a science (Saussure 1901 [see Sebeok 1974, 219 n. 21]; Morris 1946, 253; Jakobson 1983, 157), a theory (Saussure 1981 [see Godel 1957, 275]; Morris 1938 [e.g., title]; Eco 1976 [e.g., title]), a doctrine (Locke 1690; Berkeley 1732; Peirce ca. 1897; Sebeok 1974, 215; Deely 1982, 127-130), or something else entirely, seems nowadays of even less consequence than heretofore. The further question whether semiotics is 'A discipline or an interdisciplinary method?' was luminously discussed by Eco sixteen years ago; he concluded 'that semiotics, more than a science, is an interdisciplinary approach' (1978, 83). Today's general opinion is often - indeed, often defensively - expressed by clichés like "interdisciplinary" or "multidisciplinary", or "transdisciplinary" - ugly artifacts of modern academic cant.

Downplaying some of the demands for semiotics to conform to institutional descriptions, Sebeok nevertheless acknowledges the continuation of such demands in the persistence of 'inter-', 'multi-' and 'trans-' formulations as a means of rendering semiotics intelligible. The inter-, multi- or transdisciplinary researcher, of course, seldom experiences acceptance or commune in all the arenas where their work takes place.

Indeed, in the case of semiotics, the situation is even worse than these preliminary observations allow. For semiotics has been a victim of its own success. Once immensely fashionable, it meant that many (who still remain) in the academy retain a rough idea of what semiotics was without any compulsion to examine contemporary semiotics. They also harbour enough knowledge to remember some grounds upon which the first success of semiotics is to be renounced. To be a researcher in semiotics, then, all too often entails speaking only to one's fellows and disseminating research in outlets aimed largely at those same fellows, all the while having to operate within institutional configurations which, far from strengthening semiotics communities in their adversity, actually threaten to sap them of their strength.

In such a scenario, any community in the disciplinary fields of semiotics requires determination, commitment and a range of special qualities, harboured in key individuals, in order to survive. Clearly, one of the key examples in the history of semiotics is offered, above all, by Tom Sebeok. Peirce did not found a school in his lifetime; neither did Saussure. Greimas and Lotman, on the other hand, founded significant, if limited, schools dedicated to their own work.

Sebeok, by contrast, founded and maintained a school dedicated to the work of others. He always knew that, however much he was confirmed as a genius, the work he wanted to see could only be embarked upon by a community of researchers. Broadly, he saw that there were two kinds of academic research: that which is carried out by 'moles' and that which is executed by 'bees'. Moles concentrate on one space, burrowing efficiently and focussing their energy on a demarcated outcome. Bees flit from place to place, sampling nectar as they go (see Santaella Braga 2001: 100). Sebeok, personally, declared that he was a 'bee'. Scholarly communities rely on workers of both stripes. It is a telling analogy, because it is just one indication of the way that he embraced the diversity of the colleagues that made up global semiotics or the 'semiotic web', as he (see the book series with that title he inaugurated in 1986) sometimes liked to call it.

Sebeok's work as a bee was perfectly suited to his work as a convenor – not just using the nectar of others for oneself, but using it as cement as well as nourishment for an academic community. Typical convenor activity would involve book editing, book series editing, journal editing, textbook and field-defining volume publication, conference organisation, scholarly society management, along with general maintenance of a community through energetic communication and response systems. Indeed, he stated regularly in conversation that convenors, in their work and in their bearing, often possess the quality of being found congenial. Hence his neologism: 'congenor' (congenial convenor).

It is fitting that Sebeok's progeny, biosemiotics, should have the most congenial convenor of the lot – Don Favareau. Whether it has been done instinctively, or by means of a carefully calculated campaign, or a combination of both, the convening of biosemiotics has been a masterclass in Sebeokian virtues during a time of intense challenge to the integrity of the global academy. As is well known, Don attended the first Gatherings in Biosemiotics in 2001 and has been a presence at every Gathering since. When I was first formally introduced to him over a decade and a half ago, we were at a conference larger than the Gatherings and which shall remain unnamed because of its absolutely shambolic lack of organisation. Kalevi Kull, discovering that I had not met Don, said to me with a mixture of anxiety, alarm, urgency and enthusiasm, "You absolutely must meet Don Favareau!", almost as if that meeting would help reduce the entropy that was being proliferated by the conference. In a more general sense, Kalevi was not wrong. At the time, and in collaboration with Jeff Bernard, I was attempting to get the International Society for

Biosemiotic Studies more closely affiliated with the International Association for Semiotic Studies. Meeting with Don would be more likely to effect that. Personally, I was the slightest bit nervous before the meeting – much less than I would have been a decade earlier, as a much younger academic – because of Don’s Stanford affiliation. Of course, the minute I saw him giving a paper and, afterwards, as I started to speak with him, those nerves were instantly dispelled.

As stated, the key work of a convenor requires general maintenance of a community through energetic communication and response systems. From the outset, I could see that this was Don’s forté. He embodied the communicative bent in the sense of the Latin root of ‘communication’ – *communicare* – which means ‘to share’ or ‘to be in relation with.’ As with the word’s etymological roots, Don’s bearing partook of the connotations of that which is ‘common’, part of the ‘commune’, and ‘community’, suggesting an act of ‘bringing together’. There are a number of other features of *communication* that I would discover he embodied. For example, as some of the other contributions to the present volume note, Don’s work has partly been as a *historian* of biosemiotics. He thus embodies the idea of communication as a *repository of tradition*, a little like the endeavours of those in pre-print Europe protected religious tradition through the practice of writing. Alternatively, he can be seen as embodying the idea of communication as the *common denominator of public life*, a public sphere (Habermas 1989) in which everyone is facilitated and gets the opportunity to discourse on key issues. A third embodiment of communication by Don pertains to my earlier point about the shambolic conference. Sebeok (1991: 22) points out that communication decreases entropy locally. Don was not able to make massive in-roads, in this respect, to the conference where we first met; however, he was able to combat entropy consistently over the years of his maintenance of the biosemiotics community.

Communication, of course, is required to ameliorate (academic) isolation. Don’s work for the ISBS has been quintessentially communicative, producing not a priesthood (his freedom from religion is notable) but a community. Not only has Don shaped the biosemiotic community into one that tries to encourage early career researchers such as PhD students, it also offers communion through the fact that hierarchical academic demarcations are not even recognized. The Gatherings, for example, feature no keynote speakers, no ordering of papers according to ‘status’, no funding of visiting scholars and strict blind peer-review of abstracts. The ‘big names’, whatever their field, muck in with the rest of us.

Favareau's 'rules of engagement' – actually requiring to be enforced quite firmly at the outset – are now taken as read at the Gatherings and no longer need enforcement. They are simple, traditional and geared to facilitating utmost communication and democracy. That is: papers are 20 minutes in length, with 10 minutes for questions. Attention is to be given during the delivery of papers; no talking or other kinds of disruptive behaviour among the audience. Papers and discussion must keep to length. (I was amused, in 2017, to find as chair, that there were printed signals to speakers, as follows: '5 minutes', '4 minutes', '3 minutes', '2 minutes', '1 minutes', '0 minutes', 'End', then a death's head or skull and cross-bones). Everybody gets a chance to speak in a fair way; nobody is allowed to speak at so great a length that it impedes discussion or irks the rest of the group. The General Meeting is kept to strict time in order to avoid trying the patience of its attendees. Such quintessentially Sebeokian rules are simple and, arguably, should be a matter of common courtesy. However, equally arguably, they are necessary because we can all fall prey to the indiscipline that arises from the tendency to isolationism in academic life. Put another way, Favareau's rules of the Gatherings represent the discipline and benefits of the community.

However, to the best of our abilities, the biosemiotics community under Don's helm has become an open one that does not even countenance the promotion of marginality in the way that some areas of academia do. Yes, it is true that Don has worked hard to ensure that disruptive and unscientific elements are not encouraged to join and exploit the community. Nevertheless, he can be proud of the extremely diverse array of researchers, at all levels of academic and non-academic careers, that have been attracted to this disciplinary field. Molecular biologists, botanists and ethologists in the community therefore rub shoulders with philosophers, epistemologists of the built environment, media theorists, as well as dentists, doctors and mental health counsellors. The 'inter-', 'multi-' and 'trans-' formulations are seldom invoked in biosemiotics precisely because of their omnipresence. This does not happen by chance or simply because of the nature of the subject area; it has to be facilitated by congenial convening of the type that Don has instituted for the last seventeen years.

The freedom that results from the optimum amount of discipline is also evident in Don's management of biosemiotics as a *communal initiative*. Of course, certain individuals loom large in biosemiotics: the late Sebeok is one; our recently lost friend, John Deely, is another. Yet, biosemiotics is not a Sebeok or Deely society, any more than it is a

society devoted to living giants such as Hoffmeyer or Kull or Markoš. Don has worked very closely with Jesper Hoffmeyer on the latter's publications, but this has never been in service to the cult of personality. Instead, the ISBS under Don's influence has promoted academic bees; after all, mole-like behaviour is promoted sufficiently extensively by the rest of the academic establishment as its default preserve. Bees make great convenors. The best of the bees make great convenors of us all, using nectar as cement and nourishment.

Some short further comment should be added in relation to the work of congenering contained in the volume, *Essential Readings in Biosemiotics* (Favareau 2010). Other contributors to the present volume attest to the qualities and endeavour of this anthology. Here, I will briefly draw attention to the landmark nature of this work to which the mere term 'anthology' does no justice. Like many, I was a witness to the gestation of *Essential Readings* and a keen onlooker: if done correctly, this volume would establish biosemiotics as a serious communal pursuit, with tradition, history and direction; if done incorrectly, biosemiotics ran the risk of becoming a laughing stock – at best, a marginal group of sincere but arcane specialists in a limited interest area; at worst, a bunch of crackpots. Happily, as history attests, the book was done correctly. And I am delighted to say that I played a minuscule part in the book, in that I was one of the many dozens who were consulted regarding the content of that volume. Ultimately, most of my recommendations were rejected by Don, as I am certain were the recommendations of others. As with canned salmon, "It's the fish that John West reject that make John West salmon the best". Yet, the readings that appear in the volume are by no means the whole of the story. In this 865-page volume, Don provides a preface (6 pages), a general introduction (80 pages), introduction and commentaries to each reading (8, 5, 8, 5, 4, 4, 4, 4, 4, 9, 4, 4, 7, 4, 6, 4, 6, 4, 6, 4, 4, 3, 4 pages; total = 115), as well as all the other editorial paraphernalia. That amounts to the size of a book-length monograph of editorial explication along. So, at one and the same time, the *Essential Readings* is a major scholarly work, but it is also a work of convening: designing a field, making it available, communicating its contents for all.

As with the work done for *Essential Readings*, Don Favareau's spirit, communicability and open-ness, make him the beating heart of the biosemiotics community. For me, inheriting his position as Secretary of the ISBS when he resigned from that post in 2012, it is Don's spirit, suffusing the community, that counts primarily, rather than any administrative functions that need to be carried out. I am just



an errand boy, sent by grocery clerks, to collect a bill. What will endure is the founding ethos of Don Favareau, an interpretant that circulates among an ongoing community of interpreters rather than alighting on any one individual.

## References

- Favareau, Donald 2010 (ed.). *Essential Readings in Biosemiotics*. (Biosemiotics 3.) Dordrecht: Springer.
- Santaella Braga, Lucia 2001. Thomas A. Sebeok's strides across the semiotic thresholds. In: Danesi, Marcel (ed.), *The Invention of Global Semiotics*. Toronto: Legas, 97-102.
- Habermas, Jürgen 1989. *Structural Transformation of the Public Sphere: An Inquiry into a Category of Bourgeois Society*. (Burger, Thomas; Lawrence, Frederick, trans.) Cambridge: MIT Press.
- Sebeok, Thomas A. 1978. Semiotics: A discipline or an interdisciplinary method. In: Sebeok, Thomas A. (ed.), *Sight, Sound, and Sense*. Bloomington: Indiana University Press, 73-83.
- Sebeok, Thomas A. 1991. *A Sign is Just a Sign*. Bloomington: Indiana University Press.
- Sebeok, Thomas A. 2001. *Global Semiotics*. Bloomington: Indiana University Press.



# Annotated bibliography of Donald Francis Favareau

**Kalevi Kull**

University of Tartu, Estonia

We present here the list of biosemiotic publications by Donald Favareau.

In addition to his own publications, Favareau has done much work in helping to prepare the publications of his colleagues.<sup>27</sup> This includes his editorial work on some most important publications in semiotics – Jesper Hoffmeyer’s *Biosemiotics* (2008)<sup>28</sup> and the anthology *Essential Readings in Biosemiotics* (Favareau 2010e). He has edited the special issue of biosemiotics for *The American Journal of Semiotics* (vol. 24 – see Favareau 2008d) and coedited a volume for Tartu Semiotics Library series (vol. 10 – see Favareau *et al.* 2012; Favareau 2012a).

The list does not include conference abstracts, with the exception of those that have been published in books (Favareau 2012c; Favareau *et al.* 2017.)<sup>29</sup> The entries are described *de visu* (except Favareau 2000 and 2004). The list is in chronological order of publication date.

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<sup>27</sup> Among other examples, see Iacoboni, Marco 2005. Understanding others: Imitation, language, empathy. In: Hurley, Susan; Chater, Nick (eds.), *Perspectives on Imitation: From Neuroscience to Social Science. Vol. 1. Mechanisms of Imitation and Imitation in Animals*. Cambridge: The MIT Press, 77–100.

<sup>28</sup> Hoffmeyer, Jesper 2008. *Biosemiotics: An Examination into the Signs of Life and the Life of Signs*. (Favareau, Donald, ed.; Hoffmeyer, J.; Favareau, D., trans.) Scranton: University of Scranton Press.

<sup>29</sup> See some of Favareau's conference abstracts listed in Ekaterina Velmezova's article in the current volume, p. 93ff.

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Favareau, Donald 1998. The Symbolic Species: The Co-evolution of Language and the Brain by Terrence W. Deacon. *Issues in Applied Linguistics* 9(2): 179–182.

[Book review. The scholars discussed, besides Deacon, include James Mark Baldwin, Noam Chomsky, Charles S. Peirce, Steven Pinker, and Conrad H. Waddington.]

Favareau, Donald 2000. *State-matching, recognition and relevancy: The role of mirror neurons in establishing mutual intelligibility*. Los Angeles: University of California.

[Unpublished M.A. Thesis.]

Favareau, Donald 2002a. Beyond self and other: On the neurosemiotic emergence of intersubjectivity. *Sign Systems Studies* 30(1): 57–100.

[This article is based on the talk presented at the 1st Gatherings in Biosemiotics in Copenhagen, May 26, 2001. The special issue of *Sign Systems Studies* 30(1), edited by Claus Emmeche, Jesper Hoffmeyer, and Kalevi Kull, includes also several other papers from the first Gatherings.]

Favareau, Donald 2002b. Constructing representema: On the neurosemiotics of self and vision. *SEED*<sup>30</sup> 2(4): 3–24.

[Using some material from Favareau (2002a), this article criticizes the superficial and mostly metaphorical usage of semiotic terms ('signal', 'response', 'message', 'communication', 'command') in neuroscience. Speaking about the "sign vehicle of the eye" and "the sign vehicle of the 'I'", he emphasises that "visual images are not so much 'received' from incoming photon impulses as they are semiotically and co-constructively 'built' across heterogeneous and massively intercommunicating brain areas".]

Favareau, Donald 2004. *A synthesis of biosemiotics and interaction analysis for the investigation of experience as a natural category*. Los Angeles: University of California.

[Unpublished PhD Dissertation.]

Favareau, Donald 2005. Founding a world biosemiotics institution: The International Society for Biosemiotic Studies. *Sign Systems Studies* 33(2): 481–485.

[An account of the establishment of ISBS and of the preceding activities that led to this. The Society's founding meeting was held via Skype between Jesper

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<sup>30</sup> *S.E.E.D. Journal (Semiotics, Evolution, Energy, and Development)*.

Hoffmeyer, Claus Emmeche, Kalevi Kull, and Donald Favareau, in June 12, 2005. The first full in-person meeting of the founding members of the ISBS took place in July 23, 2005, in Urbino, Italy, during the 5th Gatherings in Biosemiotics.]

Schumann, John; Favareau, Donald; Goodwin, Charles; Lee, Namhee; Mikesell, Lisa; Tao, Hongyin; Véronique, Daniel; Wray, Alison 2006. Language evolution: What evolved? *Marges Linguistiques* 11: 167–199. [Report of a Roundtable organised by the journal *Language Learning*, and held at University of California, Los Angeles, on November 12–14, 2004.]

Favareau, Donald 2007a. Animal sensing, acting and knowing: Bridging the relations between brains, bodies and world. In: Witzany, Günther (ed.), *Biosemiotics in Transdisciplinary Contexts: Proceedings of the Gathering in Biosemiotics 6, Salzburg 2006*. Salzburg: Umweb, 61–69. [This article overlaps with Favareau’s text published in Schumann, Favareau *et al.* 2006. Remarkably, the author says that “it is the natural history of agents and their actions in the world that is the proper starting point for undertaking a natural history of signs” (p. 68, my emphasis)]

Favareau, Donald 2007b. How to make Peirce’s ideas clear (first in an inexhaustible series). In: Witzany, Günther (ed.), *Biosemiotics in Transdisciplinary Contexts: Proceedings of the Gathering in Biosemiotics 6, Salzburg 2006*. Salzburg: Umweb, 163–173. [The article discusses the Peircean notions of sign and interpretant in their applications in biosemiotics, in connection and comparison to the common biological interpretation of life phenomena.]

Favareau, Donald 2007c. The evolutionary history of biosemiotics. In: Barbieri, Marcello (ed.), *Introduction to Biosemiotics: The New Biological Synthesis*. Dordrecht: Springer, 1–67.

[The first large-scale description of the history of biosemiotics.<sup>31</sup> For periodization, the article uses some elements of John Deely’s approach in his *Four Ages of Understanding*.<sup>32</sup> An edited version of this article served as the first chapter of Favareau 2010e. In the opening subchapter titled “A personal prelude: my stroll through the worlds of sciences and signs”, Favareau also describes some of the background of his route to biosemiotics: “my own entry

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<sup>31</sup> For the history of biosemiotics in the 20th century, see Kull, Kalevi 1999. Biosemiotics in the twentieth century: a view from biology. *Semiotica* 127(1/4): 385–414.

<sup>32</sup> Deely, John 2001. *Four Ages of Understanding: The First Postmodern Survey of Philosophy from Ancient Times to the Turn of the Twenty-First Century*. (Toronto Studies in Semiotics and Communication.) Toronto: University of Toronto Press.

into this field came as the result of my growing discontent with the inability of cognitive neuroscience to confront issues of experiential ‘meaning’ at the same level that it was so successful in, and manifestly committed to studying the mechanics of those very same electro-chemical transmission events by which such meanings were being asserted (but not explained) to, be produced” (p. 1).]<sup>33</sup>

Favareau, Donald 2008a. Understanding natural constructivism. *Semiotica* 172(1/4): 489–528.

[A rich book review of: Wheeler, Wendy 2006. *The Whole Creature: Complexity, Biosemiotics, and the Evolution of Culture*. London: Lawrence and Wishart.]

Favareau, Donald 2008b. Collapsing the wave function of meaning: The epistemological matrix of talk-in-interaction. In: Hoffmeyer, Jesper (ed.), *A Legacy for Living Systems: Gregory Bateson as Precursor to Biosemiotics*. (Biosemiotics 2.) Dordrecht: Springer, 169–212.

[The article attempts to link interaction analysis with biosemiotics.]

Favareau, Donald 2008c. The biosemiotic turn: Part 1: A brief history of the sign concept in pre-modernist science. *Biosemiotics* 1(1): 5–23.

[The opening article for a new journal in biosemiotics (the earlier one, *Journal of Biosemiotics*, was published in 2005). This material was afterwards used in the chapter “Introduction: An evolutionary history of biosemiotics” of Favareau 2010e.]

Kull, Kalevi; Emmeche, Claus; Favareau, Donald 2008. Biosemiotic questions. *Biosemiotics* 1(1): 41–55.

[Formulation of (many) research questions for biosemiotics. This article (with some updates) was later republished – Kull *et al.* 2011a; 2011b.]

Favareau, Donald 2008d. Joining sign science with life science. *The American Journal of Semiotics* 24(1/3), iii–xv.

[Introduction to the special issue on biosemiotics. Favareau was guest editor of the issue.]

Emmeche, Claus; Hoffmeyer, Jesper; Kull, Kalevi; Markoš, Anton; Stjernfelt, Frederik; Favareau, Donald 2008. The IASS roundtable on biosemiotics: A discussion with some founders of the field. *The American Journal of Semiotics* 24(1/3): 1–21.

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<sup>33</sup> This text has also been included as Ch. 1 in the collection: Wheeler, Wendy (ed.) 2011. *Biosemiotics: Nature/Culture/Science/Semiosis*. (Living Books About Life series.) Open Humanities Press (<http://livingbooksaboutlife.org/pdfs/bookarchive/Biosemiotics.pdf>).

[Transcript of the roundtable held at the 9th World Congress of Semiotics, in June 2007 in Helsinki. Favareau was the moderator of this discussion and the one who wrote the text on the basis of the recording. An edited version is published in Emmeche *et al.* 2011.]

Favareau, Donald 2008e. Iconic, indexical, and symbolic understanding: Commentary on Aragno. *Journal of the American Psychoanalytic Association* 56(3): 783–801.

[A comment on the article: Aragno, Anna 2008. The language of empathy: an analysis of its constitution, development, and role in psychoanalytic listening. *Journal of the American Psychoanalytic Association* 56(3): 713–740. There is also a response published: Aragno, Anna 2008. Response to Favareau and Gallese. *Journal of the American Psychoanalytic Association* 56(3): 803.]

Favareau, Donald 2008f. 8. internationale Jahrestagung der Biosemiotik. *Zeitschrift für Semiotik* 30(3/4): 505–509.

[Report (in German) on the Eighth Annual Gatherings in Biosemiotics that took place in Syros, Greece, in the University of Aegean, in June 23–28, 2008.]

Favareau, Donald F. 2009. *Peirce's Theory of Signs* by T. L. Short. *Philosophy* 84(2): 311–315.

[Book review of Short, Thomas L. 2007. *Peirce's Theory of Signs*. New York: Cambridge University Press.]

Favareau, Donald 2010a. Deacon. In: Copley, Paul (ed.), *The Routledge Companion to Semiotics*. London: Routledge, 201–202.

[Dictionary article about Terrence Deacon.]

Favareau, Donald 2010b. Goodwin. In: Copley, Paul (ed.), *The Routledge Companion to Semiotics*. London: Routledge, 226.

[Dictionary article about Charles Goodwin.]

Favareau, Donald 2010c. Multimodal semiotic fields. In: Copley, Paul (ed.), *The Routledge Companion to Semiotics*. London: Routledge, 271.

[Account of the concept developed by Charles Goodwin, which denotes “the multiply embedded sign processes that are always at work in any given instance of human interpretation”.]

Favareau, Donald 2010d. Neurosemiotics. In: Copley, Paul (ed.), *The Routledge Companion to Semiotics*. London: Routledge, 275–276.

[Brief account of neurosemiotics as a branch of biosemiotics. Among further reading, it suggests the writings of Tatyana Chernigovskaya and Andreas Roepstorff.]

Favareau, Donald (ed.) 2010e. *Essential Readings in Biosemiotics: Anthology and Commentary*. (Biosemiotics 3.) Dordrecht: Springer.

[This is the major anthology of biosemiotics. It includes an extensive review about the roots and history of biosemiotics, written by Favareau, and selected texts of 24 scholars (some co-authored), each supplied with an introductory account by Favareau. He started working on this volume in 2007. One of the later versions still used a slightly different structure<sup>34</sup>. Here we list the chapters authored by Favareau.<sup>35</sup>]

Preface: A stroll through the worlds of science and signs. (v-x)

Acknowledgments. (xi)

Introduction: An evolutionary history of biosemiotics. (1-77)<sup>36</sup>

Introduction and commentary: Jakob von Uexküll. (81-89)

Introduction and commentary: Charles Sanders Peirce. (115-120)

Introduction and commentary: Charles Morris. (149-156)

Introduction and commentary: Juri Mikhajlovič Lotman. (191-196)

Introduction and commentary: Thomas A. Sebeok. (217-220)

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<sup>34</sup> In the 2009 version, the book had two parts: (I) The biosemiotic project of Thomas A. Sebeok (including chapters [in the given order] about Sebeok, Peirce, J. v. Uexküll, Morris, Lotman, Hediger, Krampen, T. v. Uexküll, Prodi, Thom, Anderson *et al.*), and (II) Post-Sebeokian biosemiotics (Kull, Rothschild, Florin, Bateson, Pattee, Deacon, Hoffmeyer, Emmeche [using the text by Queiroz, Emmeche and El-Hani], Markoš, Brier, Witzany, Barbieri).

<sup>35</sup> Several reviews of this book have been published, among them:

Alexander, Victoria N. 2011. Review: *Essential Readings in Biosemiotics: Anthology and Commentary* by Donald Favareau. *Journal of Applied Philosophy* 28(4): 412-414.

Aragno, Anna 2011. Book Review: D. Favareau, (2010) *Essential Readings in Biosemiotics*. *Signs* 5: 71-74.

Cannizzaro, Sara; Way, Lyndon 2011. Review: *Essential Readings in Biosemiotics: Anthology and Commentary*, edited by Donald Favareau. *Social Semiotics* 21(4): 609-613.

Fernández, Eliseo 2012. The inner semiotic core of biology. *Metascience* 21(1): 179-181.

Petrilli, Susan; Ponzio, Augusto 2013. Biosemiotic scenarios. *Semiotica* 195: 373-408.

Prinz, Robert 2011. Book review: Signs of science – linguistic meets biology. *tripleC* 9(1): 123-125.

Reno, Joshua 2013. *Essential Readings in Biosemiotics: Anthology and Commentary*. *Journal of Linguistic Anthropology* 23(1): 258-261.

Swan, Liz S. 2011. Signs pointing in a new direction: A biosemiotic framework for biolinguistics. *Biolinguistics* 5(4): 366-369.

<sup>36</sup> The earlier version of this chapter was published in Favareau 2007c.



Introduction and commentary: Heini K. P. Hediger. (237–240)  
 Introduction and commentary: Martin Krampen. (257–261)  
 Introduction and commentary: Thure von Uexküll (1908–2004).  
 (279–282)  
 Introduction and commentary: Giorgio Prodi (1928–1987). (323–  
 327)  
 Introduction and commentary: René Thom. (337–346)  
 Introduction and commentary: A semiotic perspective on the  
 sciences. (377–380)<sup>37</sup>  
 Introduction and commentary: Kalevi Kull. (417–420)  
 Introduction and commentary: Friedrich S. Rothschild. (445–452)  
 Introduction and commentary: Marcel Florkin. (463–467)  
 Introduction and commentary: Gregory Bateson. (501–506)  
 Introduction and commentary: Howard H. Pattee. (519–523)  
 Introduction and commentary: Terrence Deacon. (541–546)  
 Introduction and commentary: Jesper Hoffmeyer. (583–586)  
 Introduction and commentary: Claus Emmeche. (629–634)  
 Introduction and commentary: Anton Markoš. (657–661)  
 Introduction and commentary: Søren Brier. (697–701)  
 Introduction and commentary: Günther Witzany. (731–734)  
 Introduction and commentary: Marcello Barbieri. (751–755)  
 Commentary bibliography and further readings. (797–871)

Favareau, Donald 2011. The cybersemiotic project of Søren Brier. In: Thellefsen, Torkild; Sørensen, Bent; Cobley, Paul (eds.), *From First to Third via Cybersemiotics: A Festschrift Honouring Professor Søren Brier on the occasion of his 60th Birthday*. Frederiksberg: Scandinavian Book, 17–25.

[An edited version of the chapter “Introduction and commentary: Søren Brier” from Favareau 2010e: 697–701.]

Kull, Kalevi; Emmeche, Claus; Favareau, Donald 2011a. Biosemiotic questions. In: Stjernfelt, Frederik; Bundgaard, Peer F. (eds.), *Semiotics: Critical Concepts in Language Studies*. Vol. 4: *Logic, Biology, Psychology, Culture and Anthropology*. London: Routledge, 231–248.  
 [Reprinting of the article by Kull, Emmeche Favareau 2008.]

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<sup>37</sup> This is a chapter on the manifesto authored by Anderson, Myrdene; Deely, John; Krampen, Martin; Ransdell, Joseph; Sebeok, Thomas A.; Uexküll, Thure von 1984. A semiotic perspective on the sciences: Steps toward a new paradigm. *Semiotica* 44: 7–47.

Kull, Kalevi; Emmeche, Claus; Favareau, Donald 2011b. Biosemiotic research questions. In: Emmeche, Claus; Kull, Kalevi (eds.), *Towards a Semiotic Biology: Life is the Action of Signs*. London: Imperial College Press, 67–90.

[Reprinting an edited version of the article Kull, Emmeche, Favareau 2008.]

Emmeche, Claus; Hoffmeyer, Jesper; Kull, Kalevi; Markoš, Anton; Stjernfelt, Frederik; Favareau, Donald 2011. A roundtable on (mis)understanding of biosemiotics. In: Emmeche, Claus; Kull, Kalevi (eds.), *Towards a Semiotic Biology: Life is the Action of Signs*. London: Imperial College Press, 235–262.

[Publication of the edited version of Emmeche *et al.* 2008.]

Favareau, Donald; Cobley, Paul; Kull, Kalevi (eds.) 2012. *A More Developed Sign: Interpreting the Work of Jesper Hoffmeyer*. (Tartu Semiotics Library 10.) Tartu: Tartu University Press.

[Book of about 80 contributions, prepared as a *Festschrift* for Jesper Hoffmeyer's 70th birthday. Each essay comments on a quotation from Hoffmeyer's work.<sup>38</sup> The unification of essay titles was carried out by Favareau and, as a result, the volume resembles a lexicon of basic biosemiotic concepts.]

Favareau, Donald 2012a. Introduction. In: Favareau, Donald; Cobley, Paul; Kull, Kalevi (eds.) 2012. *A More Developed Sign: Interpreting the Work of Jesper Hoffmeyer*. (Tartu Semiotics Library 10.) Tartu: Tartu University Press, 9–11.

[Introduction to the *Festschrift* for Jesper Hoffmeyer, with a story of how the unique format of this book was devised.]

Morita, Emi; Favareau, Don 2012. Conversation. In: Favareau, Donald; Cobley, Paul; Kull, Kalevi (eds.) 2012. *A More Developed Sign: Interpreting the Work of Jesper Hoffmeyer*. (Tartu Semiotics Library 10.) Tartu: Tartu University Press, 83–85.

[A commentary on the apparent paradox in Hoffmeyer (1996: 112)<sup>39</sup> in which "language does not think through us, but has become a part of us" and that "language is common property and hence, extraneous to us".]

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<sup>38</sup> This original format was later used as example for some other volumes, for instance by Thellefsen, Torkild; Sørensen, Bent (eds.) 2014. *Charles Sanders Peirce in His Own Words: 100 Years of Semiotics, Communication and Cognition*. (Semiotics, Communication and Cognition 14.) Boston: De Gruyter Mouton.

<sup>39</sup> Hoffmeyer, Jesper 1996. *Signs of Meaning in the Universe*. (Haveland, Barbara J., trans.) Bloomington: Indiana University Press.

Favareau, Donald 2012b. Twelve years with the Gatherings in Biosemiotics. In: Rattasepp, Silver; Bennett, Tyler (eds.), *Gatherings in Biosemiotics*. (Tartu Semiotics Library 11.) Tartu: University of Tartu Press, 64–72.

[The author here describes briefly the first twelve Gatherings, their notable events and people (as he himself has attended these all), focusing especially on the community of biosemioticians.]

Favareau, Donald 2012c. Including absence. In: Rattasepp, Silver; Bennett, Tyler (eds.), *Gatherings in Biosemiotics*. (Tartu Semiotics Library 11.) Tartu: University of Tartu Press, 182–183.

[The abstract for his talk at the Gatherings in Biosemiotics 12 in Tartu. The paper focuses on the aspects of absence and intentionality in semiosis, referring works of Gregory Bateson, John Deely, and Terrence Deacon.]

Favareau, Donald 2012d. Introducing a new scientific term for the study of biosemiosis. In: Maran, Timo; Lindström, Kati; Magnus, Riin; Tønnessen, Morten (eds.), *Semiotics in the Wild: Essays in Honour of Kalevi Kull on the Occasion of His 60th Birthday*. Tartu: University of Tartu Press, 15–22.

[Together with some analysis of the situation in biosemiotic terminology, the author focuses on the concept and general term “to describe those structures made by semiotic control” (p. 18).]

Favareau, Donald 2013. Agapastic exploration of the biosphere: Alterity and biosemiosis. In: Petrilli, Susan (ed.), *Writing, Voice, Undertaking*. (Language, Media & Education Studies 56.) New York: Legas, 143–150.

[Article in the *Festschrift* for Augusto Ponzio. Favareau focuses on the relationship between one’s own and other in the context of biosemiosis. He concludes: “all life forms encounter chance, alterity and otherness on a moment-to-moment basis, and live their lives answering, through their actions and abductions, the eternal experiential question that the very act of living ceaselessly imposes on them: ‘what do I do now?’ Only out of such ever-renewing indeterminacy and possibility, as Peirce notes, can creative engagement with pure Otherness – or ‘evolutionary love’ – arise, and the habit-taking of actualized relationships begin” (p. 149).]

Favareau, Donald 2015a. Symbols are grounded not in things, but in scaffolded relations and their semiotic constraints (or how the referential generality of symbol scaffolding grows minds). *Biosemiotics* 8(2): 235–255.

[Article in the special issue ‘Semiotic scaffolding’, edited by Jesper Hoffmeyer. Favareau focuses on the synchronic power of semiotic scaffolding.]

Favareau, Donald 2015b. Why this now? The conceptual and historical rationale behind the development of biosemiotics. *Green Letters: Studies in Ecocriticism* 19(3): 227–242.

[This article is published in the special issue ‘Biosemiotics and culture’, guest-edited by Wendy Wheeler and Louise Westling. Opening the issue, “this introductory article presents a brief overview of the history and some of the major concepts basic to the biosemiotic perspective, discussing both the benefits and the challenges that such a perspective offers to the dominant explanatory paradigms of both contemporary science and the humanities” (p. 227).]

Favareau, Donald 2015c. Creation of the relevant next: How living systems capture the power of the adjacent possible through sign use. *Progress in Biophysics and Molecular Biology* 119: 588–601.

[The article highlights the affinities between Stuart Kauffman’s notion of the ‘adjacent possible’ and the Peircean and Uexküllian concepts of sign as developed in biosemiotics. The author’s “argument in this paper is that organisms live out their lives perpetually confronted with negotiating the omnipresent Relevant Next” (p. 588).]

Favareau, Donald; Kull, Kalevi 2015. On biosemiotics and its possible relevance to linguistics. In: Velmezova, Ekaterina; Kull, Kalevi; Cowley, Stephen (eds.), *Biosemiotic Perspectives on Language and Linguistics*. (Biosemiotics 13.) Cham: Springer, 13–28.

[An account about the relationships between biology, linguistics, and biosemiotics, with a particular focus on the role of Thomas A. Sebeok’s work. Some theoretical aspects through which biosemiotic studies can have importance for linguistics are formulated in four points (p. 23–24).]

Favareau, Donald 2016. Awakening to “reality”: John Deely’s *The Impact on Philosophy of Semiotics*. *Chinese Semiotic Studies* 12(3): 363–372.

[Book review of Deely, John N. 2003. *The Impact on Philosophy of Semiotics*. South Bend: St. Augustine’s Press. The special issue of *Chinese Semiotic Studies* 12(3), ‘Deely in Review’, was edited by Paul Copley.]

Copley, Paul; Favareau, Donald; Kull, Kalevi 2017. John Deely, from the point of view of biosemiotics. *Biosemiotics* 10(1): 1–4.

[Briefly reviewing John Deely’s (1942–2017) life, the article formulates the impact of Deely’s work to biosemiotics in eight points.]

Favareau, Donald; Kull, Kalevi; Ostdiek, Gerald; Maran, Timo; Westling, Louise; Copley, Paul; Stjernfelt, Frederik; Anderson, Myrdene; Tønnessen, Morten; Wheeler, Wendy; 2017. How can the

study of the humanities inform the study of biosemiotics? *Biosemiotics* 10(1): 9–31.

[The need to formulate this collective statement about the relationships between biosemiotics and humanities arose in one of discussion sessions of the Gatherings in Biosemiotics. Wheeler compiled the whole, consisting of separately written subchapters, largely due to the initiative of Favareau. A particular aspect of the discussion concerned the relationship between semiosis and codes.]

Kull, Kalevi; Favareau, Donald 2017. Upon the occasion of the first international biosemiotics conference in Switzerland: Some brief comments. In: Velmezova, Ekaterina; Moret, Sébastien; Isanina, Anna (eds.), *Gatherings in Biosemiotics 2017*. Lausanne: University of Lausanne, 3–8.

[This text is an invitation and introduction to the meeting, which includes a definition of biosemiotics, a list of its research questions, and a remark on the history. In addition, an attempt to describe the Swiss roots of biosemiotics is provided.]

Favareau, Donald; Copley, Paul; Kull, Kalevi; Anderson, Myrdene 2017. “A sign is *what?*”: A John Deely memorial symposium. In: Velmezova, Ekaterina; Moret, Sébastien; Isanina, Anna (eds.), *Gatherings in Biosemiotics 2017*. Lausanne: University of Lausanne, 64–65.

[An abstract for the panel session about John Deely, organised by Don in June 9, at the 17th Gatherings in Biosemiotics. The panellists included the four mentioned and Gerard J. van den Broek. See also Copley *et al.* 2017, above]

Favareau, Donald; Kull, Kalevi 2017. Yoshimi Kawade: A biosemiotician of the first generation. 川出由己：初代生命記号論者.

[In print, in the book about Kawade, edited by his daughter Saiki Terasawa *et al.*, in Japanese. An account of the biosemiotic publications by the Japanese biologist Yoshimi Kawade (1924–2015), with a brief characterization of the Japanese tradition in life sciences. Includes Kawade’s bibliography.]

Favareau, Donald; Gare, Arran 2017. The biosemiotic glossary project: Intentionality. *Biosemiotics* 10.

[In preparation. The entries of the biosemiotic glossary project<sup>40</sup> published so far include ‘Agent, agency’ by Morten Tønnessen, ‘Umwelt’ by Morten Tønnessen, Riin Magnus and Carlo Brentari, and ‘the semiotic threshold’ by Claudio J. Rodríguez Higuera and Kalevi Kull. The review article provides an analysis of usage of the term ‘intentionality’ in biosemiotic literature.]

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<sup>40</sup> About this project, see Sharov, Alexei; Maran, Timo; Tønnessen, Morten 2015. Towards synthesis of biology and semiotics: Editorial. *Biosemiotics* 8(1): 1–7.





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