

# Group Discussions in Biosemiotics

## 2010

### Discussion of the paper On the Origin of Language

( [click here for the pdf](#) )

1

----- Original Message -----

**From:** [Marcello Barbieri](#)

**To:** [Alexander Kravchenko](#) ; [Alexei Sharov](#) ; [Almo Farina](#) ; [Anton Markos](#) ; [Argyris Arnellos](#) ; [Bruce Weber](#) ; [Catherine Cotton](#) ; [Charbel El-Hani](#) ; [Claus Emmeche](#) ; [Cliff Joslyn](#) ; [Dario Martinelli](#) ; [Dominique Lestel](#) ; [Don Favareau](#) ; [E liseo Fernandez](#) ; [Fatima Cvrcková](#) ; [Frederik Stjernfelt](#) ; [Gérard Battail](#) ; [Guenther Witzany](#) ; [Han-liang Chang](#) ; [Howard Pattee](#) ; [Jana Svorcova](#) ; [Jean Umiker-Sebeok](#) ; [Jesper Hoffmeyer](#) ; [Joanna Raczaszek-Leonardi](#) ; [João Carlos Major](#) ; [John Collier](#) ; [John Deely](#) ; [Jon Umerez](#) ; [Jonathan Hope](#) ; [Kalevi Kull](#) ; [Karel Kleisner](#) ; [Koichiro Matsuno](#) ; [Luis Emilio Bruni](#) ; [Luis Rocha](#) ; [Marcel Danesi](#) ; [Marcella Faria](#) ; [Marcello Barbieri](#) ; [Mario Gimona](#) ; [Morten Tønnessen](#) ; [Myrdene Anderson](#) ; [Natalia Abieva](#) ; [Paul Cobley](#) ; [Peter Cariani](#) ; [Peter Harries-Jones](#) ; [Prisca Augustyn](#) ; [Sergey Chebanov](#) ; [Søren Brier](#) ; [Stanley Salté](#) ; [Stefan Artmann](#) ; [Stephen J. Cowley](#) ; [Stephen Pain](#) ; [Susan Petrilli](#) ; [Terrence Deacon](#) ; [Timo Maran](#) ; [Tommi Vehkavaara](#) ; [Victoria Alexander](#) ; [Wendy Wheeler](#) ; [Winfried Nöth](#) ; [Yaqmur Denizhan](#) ; [Yair Neuman](#)

**Sent:** Thursday, January 14, 2010 8:22 AM

**Subject:** Consultation on Biolinguistics

Dear Colleagues,

We have all been critical of Chomsky's ideas, to a lesser or greater extent, but we cannot ignore them, especially because they are the basis of the new research field of Biolinguistics which has been developed in parallel with Biosemiotics. By a strange coincidence, the journals that bear their names, *Biolinguistics* and *Biosemiotics*, have even started regular publication together, in 2008.

The crucial point is that both fields regard language as a natural phenomenon and claim a *scientific* approach to its study. Two different philosophies can remain entrenched forever into antagonistic positions, but two scientific disciplines are bound to look for dialogue, testing, confrontation and, ideally, for a synthesis of their ideas. Such a process, however, requires not only individual contributions but also collective discussions, and that is precisely the purpose of this collective letter.

I am sending in attachment the draft of a paper on the origin of language (provisional title "Biolinguistics and Biosemiotics") that proposes a synthesis of the two fields and I invite each of you to express your opinion. If you want to comment on the paper I shall be grateful, of course, but you can also ignore it and just express your ideas on the issue in question. The purpose of this consultation is to get a realistic picture of the feelings that exist today in Biosemiotics in respect to Biolinguistics, and I hope that you will accept to comment on this point. Many thanks in advance for your attention and for your contribution.

All the best

Marcello

PS – Those who want to be removed from this mailing list are warmly recommended to inform me as soon as possible, and I will make sure that they do not receive unwanted mail. Thank you.

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----- Original Message -----

**From:** [Morten Tønnessen](#)**To:** Mailing LIST**Sent:** Thursday, January 14, 2010 6:35 PM**Subject:** Re: Consultation on Biolinguistics

Dear Marcello (and dear All),

I have a few comments/questions to your text (though I have little or nothing to contribute with concerning a general discussion about biolinguistics). First, though, I would like to ask where it will be published (as I would like to quote it in one of my articles-in-process).

Now, to questions and comments:

- 1) You write that "Sebeok's conclusion that semiosis is based on interpretation is undoubtedly valid in animals, but ... not applicable, for example, to the cell, where the genetic code has been virtually the same for billions of years, which clearly shows that it does not depend on interpretation." It is not clear to me how the fact that the genetic code has been virtually the same practically forever shows that it does not depend on interpretation, since in order to function the genetic code must not only have been encoded but must further repeatedly be decoded - at a cellular level (and herein lies interpretation).
- 2) You claim that "animals do not interpret the world but only *representations* of the world. Any interpretation, in short, is always exercised on internal models of the environment, never on the environment itself". Sure, perception of "external reality" is always mediated. Nevertheless, "the environment" (in an objective sense) necessarily represents the final/ultimate object of any perception. The percepts are never *identical* to their final objects - but why stress that they are (fundamentally) *different* from them? That is trivially true. But related they are. Not even man can take in "reality" unmediated.
- 3) I find your explanations of how natural selection favors icons and indexes rewarding and interesting - but when you ask: "Why were animals unable to go beyond icons and indexes? Why didn't they learn to use symbols?" I think you neglect some empirical evidence to the contrary.
- 4) I also found interesting your observation that in "all other mammals the wiring of the brain takes place almost completely in the dark and protected environment of the uterus, whereas in our species it takes place predominantly outside the uterus, where the body is exposed to the lights, the sounds and the smells of a constantly changing environment." This is clearly a key point.

morten tønnessen

<http://UtopianRealism.blogspot.com>

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----- Original Message -----

**From:** <[ssalthe@binghamton.edu](mailto:ssalthe@binghamton.edu)>**To:** Mailing LIST**Sent:** Thursday, January 14, 2010 9:18 PM**Subject:** Re: Consultation on Biolinguistics

Marcello -- I believe that Morten makes a good point with:

"It is not clear to me how the fact that the genetic code has been virtually the same practically forever shows that it does not depend on interpretation, since in order to function the genetic code must not >only have been encoded but must further repeatedly be decoded - at a cellular level (and herein lies interpretation).

Is it not the case that there are many suggestive evidences for interpretation in the new data about microRNA's being used to modify genetic information?

And we know that mRNA is often (usually?) the result of snipping pieces from different genetic loci and pasting them together. And what about the case in microorganisms where the genetic material can be read in both directions? This area of research (which I do not know many details about) seems to me to present a picture of the cell as 'playing its genome like a piano'.

STAN

4

----- Original Message -----

**From:** [Marcello Barbieri](#)**To:** Mailing LIST**Sent:** Friday, January 15, 2010 11:59 AM**Subject:** About coding and interpretation

Dear All,

Stanley Salthe has called attention to the following point made by Morten Tønnessen:

"It is not clear to me how the fact that the genetic code has been virtually the same practically forever shows that it does not depend on interpretation, since in order to function the genetic code must not only have been encoded but must further be repeatedly decoded - at a cellular level (and herein lies interpretation)."

Morten, in short, states that there is interpretation, at the cellular level, because the genetic code is not only encoded but also repeatedly decoded. This idea that coding and decoding is equivalent to interpretation has come up many times in our discussions, and is a continuous source of confusion, so allow me to comment on it in some details. Let me divide the discussion into two parts:

- (1) Is coding-decoding equivalent to interpretation at the HUMAN level?
- (2) Is coding-decoding equivalent to interpretation at the CELLULAR level?

(1) At the human level, let's take the example of the Morse code. It is clearly an example of coding-decoding but is that interpretation? If we accept that equivalence, we have to accept also two consequences: (a) the coding-decoding of a computer is equivalent to interpretation; and (b) the interpreting activity of a human being is equivalent to coding-decoding, so a human being is like a computer, a mere stimulus-response machine (behaviourism). It seems to me that both points are wrong, hence the conclusion that interpretation is NOT equivalent to coding-decoding at the human level.

(2) Is coding-decoding equivalent to interpretation at the cellular level? This is often justified by the fact that the cell has a context-dependent behaviour, and by the argument that such a behaviour MUST be the result of interpretation. But let's take a closer look. The genetic code and the signal-transduction code are two sets of rules like those of the Morse code, and the application of those rules is what we call coding-decoding. They are context-free, precisely like the rules of the Morse code. But what happens when the genetic code and the signal-transduction code work TOGETHER? The answer was provided by the classic experiments of Jacob and Monod: the cell makes protein synthesis according to the inputs of the transduction code and its behaviour becomes context-dependent! That is all we need to explain the context-dependent behaviour of the cell: two codes together, two integrated activities of coding-decoding!

But there is more than that. In addition to the above two codes, the eukaryotic cell has many other codes, such as splicing codes, compartment codes, histone code, sugar code and so on. Now, what happens when many codes are present? Remember the three-body problem? With two bodies there is a unique solution, but with three or more bodies the number of solutions become infinite.

That is why eukaryotic cells have such a virtuoso behaviour.

It is absolutely true, as Stanley Salthe is saying, that the cell is 'playing its genome like a piano', but that is precisely because it has a community of codes. The data about microRNA's being used to modify genetic information, prove that there are microRNA-coding rules, that's all. And the same message we get from microorganisms where the genetic material can be read in both directions.

My conclusion is that coding-decoding is distinct from interpretation always and at ALL levels. They are two distinct processes and they should not be confused. That is why I am saying that there are two distinct types of semiosis in Nature, one based on coding and one based on interpretation.

You may not agree with these arguments, but now I hope that they are clear enough.

All the best

Marcello

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----- Original Message -----

**From:** [Marcello Barbieri](mailto:Marcello.Barbieri)**To:** Mailing LIST**Sent:** Friday, January 15, 2010 3:21 PM**Subject:** Re: Consultation on Biolinguistics

Dear Colleagues,

Morten Tønnessen has made another point that is worth discussing. It is this:

"when you ask: "Why were animals unable to go beyond icons and indexes? Why didn't they learn to use symbols?" I think you neglect some empirical evidence to the contrary."

That is true, so I will add a note saying that "there are some examples of symbolic processes in animals but no mechanism that generates an unlimited number of symbolic entities from a finite set of symbols. The recursive use of symbols, in other words, does not exist in animals, and it is in this sense that they were unable to go beyond icons and indexes". Many thanks for pointing that out, Morten!

Marcello

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----- Original Message -----

**From:** <[charbel@ufba.br](mailto:charbel@ufba.br)>**To:** Mailing List**Sent:** Friday, January 15, 2010 11:43 PM**Subject:** Re: Consultation on Biolinguistics

Dear Marcello

Even though there is some evidence of recursivity in european starlings....

<http://www.nature.com/nature/journal/v440/n7088/full/4401117a.html>

<http://www.nature.com/nature/journal/v440/n7088/full/nature04675.html>

Cheers

Charbel

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----- Original Message -----

**From:** <[changhl@ntu.edu.tw](mailto:changhl@ntu.edu.tw)>**To:** "Marcello Barbieri" [brr@unife.it](mailto:brr@unife.it)**Sent:** Friday, January 15, 2010 5:22 AM**Subject:** Re: Consultation on Biolinguistics

Dear Marcello,

I have read your essay with profound interest and, in fact, am writing something in the same line.

My preliminary observations are as follows.

(1) The parallel study is very interesting and quite thorough in that you have addressed almost all the analogous and differentiating aspects between the two disciplines.

(2) If anything is missing, it would be the Cartesian innateness which is the foundation of Chomsky's competence/performance. The transcendental, idealistic link is fundamental to Chomsky.

Whereas Homo loquens are homo symbolicum, one cannot, however, say, bestia loquens or bestia symbolica --lexical and grammatical gender being another problem.

(3) Furthermore, the Chomskyian Revolution has exerted more far-reaching influence to which the Sebeokian project is yet to inspire.

(4) Finally, as Saussure & Co has asserted again and again, linguistics is a branch of general semiologie, precisely because of the modelling/modelled relationship, but can one say the same or similar thing about biolinguistics and biosemiotics?

One is not yet clear as to which is modelling which?

Well done and congratulations!

Han

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----- Original Message -----

**From:** [Günther Witzany](#)**To:** Mailing LIST**Sent:** Thursday, January 14, 2010 6:06 PM**Subject:** Re: Consultation on Biolinguistics

Dear Marcello!

In your description of language the Charles Morris trilogy is missing. Everything which functions like a language must be object to syntactic, semantic and pragmatic analyses. If one level is missing, it is not language. The error of Chomsky and his "universal grammar" is, that syntax determines meaning. As we know especially through epigenetics it is the pragmatic context which determines meaning. Additionally no natural language speaks by itself there must be agents which speak. As we know today genetic content arrangements in prokaryotes are the result of natural genome editing competences of (persistent) viruses. Remnants of such viruses also are important agents in multicellular eukaryotes if we think on the role of RNA agents acting shortly after transcription prior to translation into proteins, such as rRNAs, tRNAs or mRNAs, the whole range of non-coding RNAs and - additionally - transposons/retrotransposons and related agents. If we will have chance of unifying biolinguistics and biosemiotics we should start with rejection of mathematical theory of language which is not able to explain sufficiently the generation of new sentences/sequences. Language functions dissimilar to the freezing of water to ice where no semiotic rules are necessary. Best Wishes

Guenther

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----- Original Message -----

**From:** [Абиева Наталия](#)**To:** Mailing LIST**Sent:** Friday, January 15, 2010 3:34 PM**Subject:** Re: Consultation on Biolinguistics

Dear Marcello,

it is good you have turned to bridging biolinguistics and biosemiotics. I also believe that it is time to overcome prejudices that biologists and linguists have against each other and start a dialogue.

My critical remarks and comments are as follows:

- 1) Like Günther Witzany I think you should mention the Morris's trilogy - semantics, syntax and pragmatics. It is classics of semiotics and describes the essence of signs most fully. It was the first thing that I thought of while reading your paper.
- 2) More clarity about the terms SIGN and CODE is needed. I understand code as a set of similar signs (like a genetic code, a linguistic code) that can be organized in different patterns. If it is so, then we can say that such patterns are operated under some syntactical rules.
- 3) I think that your point "syntax has nothing to do with meaning" is to be explained more. I cannot agree that Chomsky deprived syntax of meaning, on the contrary it was he to fire investigations in the semantics of both surface and deep syntactic structures. The order of words in a sentence is quite meaningful. Linguists distinguish standard sentence structures in every language, and every case of their violation is treated as marked with certain extra meaning.

Compare, for example, (1) A man came in. - (2) In came a man.

(1) is absolutely normative and neutral in tone - the fact is just stated; while (2) bears extra information about "some man suddenly coming in". And this change of meaning is due to the change of word-order. At the same time both sentences are normative.

But it does not mean that we can change the word-order infinitely, especially in the English language.

Compare, (3) The door opened. - (4) Opened the door.

(4) is absolutely understandable. So, different syntactic structures possess certain general meaning after all.

Best regards,

Nataliya Abieva

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----- Original Message -----

**From:** [Prisca Augustyn](#)**To:** Mailing LIST**Sent:** Friday, January 15, 2010 5:00 PM**Subject:** RE: Consultation on Biolinguistics

Dear Marcello,

Thank you for sharing your paper draft. As you know, I am not at all "critical of Chomsky's ideas" and I have pointed out the parallels and affinities that exist between Biolinguistics and Biosemiotics in my article "Uexküll, Peirce, and other affinities between Biolinguistics and Biosemiotics" published in *Biosemiotics* Vol. 3.1, 2009. In fact, Cedric Boeckx (the editor of *Biolinguistics*) recently contacted me after reading it and expressed his interest in further explorations of the parallels between the two fields.

May I recommend an excellent article published recently in *Biolinguistics* by evolutionary biologist and Chomsky-collaborator W. Tecumseh Fitch entitled "Prolegomena to a Future Science of Biolinguistics" (attached to this message). He discusses precisely the 'sociological problems' and scientific challenges that open up even more parallels between Biolinguistics and Biosemiotics.

Greetings to all,

Prisca

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----- Original Message -----

**From:** "Kalevi Kull" <[kalevi.kull@ut.ee](mailto:kalevi.kull@ut.ee)>**To:** Mailing LIST**Sent:** Friday, January 15, 2010 10:15 PM**Subject:** Re: About coding and interpretation

Dear Marcello,

so you say that a cell is just a Morse-code machine, with many codes in it.

And this is indeed the point - I would say that the way how these codes are organised into a whole is not any more a code, it is semiosis.

Semiosis includes codes, but semiosis is not a set of codes. This is the semiotic organisation that makes certain intentionality possible already at the cellular level. Coding-decoding process has no reason to be endless in the sense that life process is and semiosis is and interpretation is, as Peirce would say.

I like the discussion. Best

Kalevi

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----- Original Message -----

**From:** [Marcello Barbieri](#)**To:** Mailing LIST**Sent:** Saturday, January 16, 2010 9:39 AM**Subject:** Re: About coding and interpretation

Dear Kalevi,

NO; NO; NO!!! I am NOT saying that the cell is just a Morse –code machine with many codes in it!

I have used the example of the Morse code only to explain the difference between coding and interpretation in the simplest possible terms. On many other occasions, however, including many different Gatherings, I have repeatedly underlined that the cell is NOT a computer-machine (because it has an internal codemaker) and that the genetic code is NOT like the Morse code (because it is not reversible, because it is a manufacturing code etc etc.).

Your statement that there is a certain intentionality at the cellular level, is like the idea that consciousness exists because there is a little bit of consciousness in every atom of the Universe. That is a recipe for disaster. If you want to kill Biosemiotics and turn it into a pseudoscience just go on saying that sort of things. Think about it, for God's sake!!!

Marcello

13

----- Original Message -----

**From:** [Marcello Barbieri](#)**To:** Mailing List**Sent:** Sunday, January 17, 2010 8:12 AM**Subject:** Re: Consultation on Biolinguistics

Dear Kalevi,

I want to apologize for my first reaction to your email. But let me explain. I have been very upset, recently, in finding out that Biosemiotics is largely regarded as a view that attributes “mental” properties to the cell, and “intentionality” was precisely one of them (the other two were “feelings” and “consciousness”). That is all that gets through, and people seem to ignore that Biosemiotics is also a highly pluralistic field where many people have a genuine scientific approach to the study of biological semiosis. As you know, I am committed to a scientific Biosemiotics, but I also pledged a commitment to pluralism when we started working together, and this is what was missing in my reaction to your letter. Sorry about that.

Yours

Marcello

PS – Let me remind you and other colleagues that the main purpose of this consultation is to get your opinions about a possible convergence of Biolinguistics and Biosemiotics.

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----- Original Message -----

**From:** "Kalevi Kull" <[kalevi.kull@ut.ee](mailto:kalevi.kull@ut.ee)>**To:** Mailing LIST**Sent:** Sunday, January 17, 2010 1:01 PM**Subject:** Re: Consultation on Biolinguistics

Thank you very much, Marcello! Accepted :-)

A thought on the main topic of your paper - the relationship between linguistic and semiotic approaches to biology.

I think the paper would win much if the historiographic chapter will focus on the work that has been done in comparison of the linguistic and semiotic approaches. I agree, Prisca Augustyn's article has to be certainly considered. Also Winfried Nöth has written on the topic, and several other semioticians and biosemioticians. Linguistic and semiotic approaches to biology generally belong to quite different traditions (however, words sometimes mingle). Linguistic one is usually semiological, or analytic-philosophical, and also what is called semantic mainly belongs to this. This difference in traditions would also be good to describe in the paper.

John Deely has written well about this distinction.

With all best wishes,

Kalevi

P.S. In my earlier post, I've used the term 'intentionality' in the sense it has been used in the "Introduction to Biosemiotics" book. According to my understanding, there is no intentionality in non-living world. I understand that there exist different usages, and I agree it is good to be precise in meanings of terms.

:-) K.

## 15

----- Original Message -----

From: "John Collier" <[collierj@ukzn.ac.za](mailto:collierj@ukzn.ac.za)>  
 To: Mailing LIST  
 Sent: Saturday, January 16, 2010 4:19 PM  
 Subject: Re: About coding and interpretation

At 03:39 AM 2010/01/16, Marcello Barbieri wrote:

"Dear Kalevi, NO; NO; NO!!! I am NOT saying that the cell ..... etc"

I agree with this. Although it would be nice if there was a continuum between basics physics and mind, I think there is something more involved in intelligent thought than what is going on in basic physical processes. There is something more in living systems too, which involves what Kant called autonomy. But this is not enough to explain the additional properties involved in mind. That is one level above, at least. The difference is that living systems have self control, and mental systems have reflective self control. We need to pay attention to these differences.

John

## 16

----- Original Message -----

**From:** [Peter Cariani](#)  
**To:** [Marcello Barbieri](#)  
**Cc:** [Peter Cariani](#)  
**Sent:** Friday, January 15, 2010 7:30 PM  
**Subject:** Re: About coding, interpretation, and Morrisean modes of the semiotic

Dear All,

I think a great deal of the problem has to do with the connotational ambiguities associated with words like "interpretation".

In many ways, if I read his ideas correctly, Barbieri's distinction between coding and interpretation can be made clearer using Morris's concepts of syntactic, semantic, and pragmatic relations.

A coding relation here is a syntactic linkage that translates signs into other signs. Decoding Morse code into letters and numbers is a syntactic coding operation because it only depends on mapping of sign types, and not on the linkages of the sign with either external states of affairs or purposes.

If the Morse coded message has semantic content in the eyes of the receiver -- let's say the message is "It is now raining in Paris", then the word string engages semantic relations in the receiver (the receiver believes that there is a connection between the message and state of the world in Paris, which could be verified empirically by making a measurement).

Interpretation = formation or utilization of semantic linkages of signs (ultimately) to the world external to the sign system.

The Morse code might also have pragmatic meaning that reflects the linkage of the sign-string to the purposes of either sender or receiver. For example, in terms of purposes it might mean "Bring an umbrella when you come to Paris" or even "The weather is bad, so we won't be able to have a picnic in the park as we had planned."

Interpretation involves switching of beliefs (and ultimately behavior), contingent on input signs.

In terms of DNA, the syntactics involve rule-governed operations on sign-strings (e.g. transcription), while the semantics involve transforming signs to analog, physical dynamical states or actions. The semantics of a gene lie in their manifold effects on the cell and its environment. The interactions of a protein product go in both directions between organism and environment.

The pragmatics of a gene involve what role the gene plays in the functioning of the cell, e.g. homeostasis, internal control, and ultimately survival and reproduction. What role does the gene play in realizing the functions of the cell necessary for its sustenance and propagation?

So there are (I would argue, like Morris) THREE modes of the semiotic:

Semantics = relations between sign types

Semantics = relation between sign and world outside the sign system

Pragmatics = relation between sign and purposes (requires a goal-seeking, cybernetic system, such as a living organism)

That would be my way of making these distinctions.

all the best,

Peter Cariani

## 17

----- Original Message -----

From: "Günther Witzany" <[witzany@sbg.at](mailto:witzany@sbg.at)>

To: "Peter Cariani" <[cariani@mac.com](mailto:cariani@mac.com)>

Cc: Mailing LIST

Sent: Saturday, January 16, 2010 7:58 PM

Subject: Re: About coding and interpretation

Hi Peter!

May I suggest: Pragmatics = relation between signs and sign users

Best

Guenther

## 18

----- Original Message -----

**From:** [Jesper Hoffmeyer](#)

**To:** [Marcello Barbieri](#)

**Cc:** Mailing LIST

**Sent:** Sunday, January 17, 2010 1:18 PM

**Subject:** Re: Consultation on Biolinguistics

Dear all

Just a short note on "intentionality":

"The phenomenon of something being "about" something else has come to be known as *intentionality*. Dead things like clouds or stones are not believed to possess intentionality, they are not about something else, but thoughts, fears, hopes and other mental states exhibit intentionality. Intentionality has been seen as a demarcation line between humans and animals. An alternative position, probably shared by most philosophers of mind, considers that whatever is real is also nonintentional and explicable naturalistically. The paper presents a third position, a biosemiotic approach, that takes intentionality to be a real property of all living systems that - like everything else in the life world - calls for evolutionary explanation. The paper will sketch an evolutionary trend towards increased semiotic freedom."

This text is the abstract for my talk at the upcoming conference in Copenhagen "Great expectations" that is going to assemble many neurobiologists, -philosophers etc. in February this year in

Copenhagen: <http://www.dpu.dk/site.aspx?p=14675>

Best wishes to all,

Jesper

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----- Original Message -----

**From:** [Victoria N. Alexander](#)**To:** Mailing LIST**Sent:** Sunday, January 17, 2010 3:25 PM**Subject:** Re: Consultation on Biolinguistics

Dear Marcello,

I want to second what Jesper has mentioned about "intentionality" referring to "aboutness," perhaps a better term for it is not so easily associated with conscious human thought. I want to further dehumanize our notion of "aboutness."

For Biosemioticians I think it is best to understand "aboutness" in terms of the way the parts of a self-organized system relate to and are constrained by the whole. The parts' activities are "about" the whole.

Thus, the parts' constrained actions are signs of the whole. A whole is an object to which none has direct access and can only be known through signs. (This is why biology needs biosemiotics!)

Intentionality (i.e. a response about an object not directly present) is not something that can be attributed to a single act or a particular cell or neuron. Rather it is the patterned behavior that emerges from the interactions of a complex system. I think therefore that I can agree with you that "interpretation" cannot be observed in the particular action of a particular cell. That objects *have been* interpreted in the life of a cell or in the course of the evolution of species becomes obvious only retrospectively. (The new paper by Eliseo that you asked me to read takes this position too.)

We may understand Peirce's notion of "interpretation" as a "response" to a sign as Tom Short argues, and therefore it seems to me Marcello that you do have this same notion of intentionality in your understanding of coding-decoding:

"...what happens when the genetic code and the signal-transduction code work TOGETHER? The answer was provided by the classic experiments of Jacob and Monod: the cell makes protein synthesis according to the inputs of the transduction code and its behaviour becomes context-dependent! That is all we need to explain the context-dependent behaviour of the cell: two codes together, two integrated activities of coding-decoding! But there is more than that. In addition to the above two codes, the eukaryotic cell has many other codes, such as splicing codes, compartment codes, histone code, sugar code and so on. Now, what happens when many codes are present? Remember the three-body problem? With two bodies there is a unique solution, but with three or more bodies the number of solutions become infinite."

A three-body interacting system is here understood as a complex, self-organizing system, right? When you say, the cell's "behavior becomes context-dependent" it seems to me you are referring to a response that is "interpretation" in Peirce's sense. The cell's actions, responses, come to be a sign of the constraints of the whole in which it functions. Your citing the three-body problem is precisely right, for this is where complex behavior--and intentionality--begins to emerge. In citing this, though, you do invite the charge of being pansemiotician, which I sure you will hotly deny. And so I offer you this defense against any such accusations: In an inanimate three-body interaction, the emergent wholeness is not harnessed, as it is in animate systems, and therefore this kind of free-floating whole, as found in the three-body chemical reactions in petri dishes, say, has only the potential to be employed semiotically if it can be harnessed by a larger system to increase or maintain the larger system's functionality.

It seems that in raising the question, Can biosemiotics and biolinguistics be integrated? we are obliged to return to the question, What is biosemiotics? We still have much to do here. Personally I think there is agreement underlying all our various points of view. We just don't know it yet because we haven't agreed on our terms yet. We are making progress. Marcello, you may not think you agree with me because I'm a Peircean but I don't find much to object to when I read your work. Correct me if I'm wrong and you believe we do in fact disagree!

With respect,

Tori

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----- Original Message -----

From: <[ssalthe@binghamton.edu](mailto:ssalthe@binghamton.edu)>

To: Mailing LIST

Sent: Sunday, January 17, 2010 4:35 PM

Subject: Re: Consultation on Biolinguistics

Jesper and Tori have raised the issue of intentionality -- as being restricted to living systems.

Agreeing with Jesper's point that intentionality refers to 'aboutness', Tori states:

"For Biosemioticians I think it is best to understand "aboutness" in terms of the way the parts of a self-organized system relate to and are constrained by the whole. The parts' activities are "about" the whole. Thus, the parts' constrained actions are signs of the whole. A whole is an object to which none as direct access and can only be known through signs. (This is why biology needs biosemiotics!)"

She goes on to mention contextuality being a general term in this regard. I believe that the importance of contextuality is the general message of both semiotics and semiology.

As everyone knows, I take a 'pansemiotic' perspective, based on our ability to generalize, and on the need to take a developmental / evolutionary perspective.

Intentionality relates to purpose. I note that in biology purpose (teleology) was generalized by Pittendrigh to function (teleonomy), and Mayr went further to generalize teleonomy to teleomaty (physical tendency).

Thus, {teleomaty {teleonomy {teleology}}}

I think the biggest problem in this perspective is pointed up by Tori's statement above.

Most folks do not see that, or how, a whole can be discerned in abiotic systems. I think the key here is Prigogine's concept of 'dissipative structure'.

Organisms are (internally informed) dissipative structures, but vortices are also dissipative structures.

Their boundaries are not so clearly drawn as are those of organisms, but they do have them.

This is where the concept of 'vagueness' becomes important. Most things in the world are in one degree or other vague, and science has not yet learned to deal with this, making instead crisp, mechanistic models of everything. Indeed, at some scale everything is vague. Consider a dancer, and take a perspective where a coup d'oeul is one minute instead our own one second. The dancer is now just as vague as a tornado is to our glimpse of it. The simple ploy of changing scale changes everything!

STAN

21

----- Original Message -----

From: [Victoria N. Alexander](mailto:Victoria N. Alexander)To: [ssalthe@binghamton.edu](mailto:ssalthe@binghamton.edu)

Cc: Mailing LIST

Sent: Sunday, January 17, 2010 5:26 PM

Subject: Re: Consultation on Biolinguistics

Stan,

The weakness/strength in my approach is that I want to agree with everybody. I agree with you too Stan in extending the concept of semiosis to apply--to some extent--to all complex systems, even tornados, or BZ reactions. BUT a single complex system, unharnessed by any other, isn't fully semiotic or teleoloical.

That's why I have introduced the notion of poesis to describe the singular events at the microlevel of self-organization that may (or may not) eventually lead to semiosis in interacting complex systems (*plural*).

I can easily translate this into a specification hierarchy, as you do, noting the emergence of distinct entities and degrees of teleo-this or that at each level.

You and I seem to disagree insofar as I consider each hierarchy to represent an entity which is radically new.

You claim to advocate hylozoism, but as I see it, you are simply more interested in the continuum than the "cuts" but you don't deny the existence of the cuts. You note the importance of scale. Often when and if biosemioticians disagree its because we're each talking about different levels and don't realize it. Any part is a part at one level and can also be a whole at another. Any part is thus only "poetic" at one level (I won't fully unpack my use of this term here: suffice it to say it involves vagueness and "accidental" icons and indices) but can be semiotic on another.

Tori

## 22

----- Original Message -----

**From:** [Marcello Barbieri](#)

**To:** New Mailing List (58 Members)

**Sent:** Monday, January 18, 2010 10:56 AM

**Subject:** Re: Consultation on Biolinguistics

Dear Victoria,

Many thanks for your Peircean olive-branch. It is a thoughtful piece, but right now I don't feel like discussing the "intentionality" issue. As you have seen, I am rather accident-prone in that field, so I suggest that we postpone it, for a while. It could be a good subject for your Gathering in New York, for example, and if you organize a session about it I would certainly like to take part.

For the time being, allow me to come back to the issue in question, i.e., the relationships between biolinguistics and biosemiotics. The issue is not about the relationships of the past (we all know about them and there is no point in repeating the same things), but about those of the future. And since this is already too big a subject, I have proposed to discuss one particular example of convergence, the idea that the organic codes are the bridge between the two disciplines.

Let me be even more specific. You could regard my paper as something that you are asked to write a short review about. You could say, for example, "I don't agree with it, but it should be published" or "some points must be revised" (Natalia Abieva, for example, has underlined one of them, and I do accept her suggestion), etc., etc.

Writing a short review, in short, would be the most practical way of starting a discussion on where do we go from here on the problem of language. Please think about it. Thanks again.

Best

Marcello

## 23

----- Original Message -----

**From:** [Koichiro Matsuno](#)

**To:** Mailing LIST

**Sent:** Monday, January 18, 2010 3:30 AM

**Subject:** RE: Consultation on Biolinguistics

Folks,

About the aboutness Jesper referred to, one may be reminded of chemical affinity entertained by some serious people even since long before the advent of alchemy. One chemical may exhibit some affinity toward some others even not present on the spot. Another example comes from physics. The idea of a heat engine coined by Sadi Carnot in 1824 is about the energetic resources to feed upon. Although the original conception of a heat engine was upon an engineering artifact by an intelligent human being, its naturalization would be straightforward as Stan's tornado aptly demonstrates. Aboutness is already latent in chemistry and physics. Best to all,  
Koichiro Matsuno

24

----- Original Message -----

From: "G rard Battail" <[gbattail@club-internet.fr](mailto:gbattail@club-internet.fr)>

To: Mailing LIST

Sent: Monday, January 18, 2010 10:03 AM

Subject: Re: Consultation on Biolinguistics

Dear Marcello,

Thank you very much for sending me your paper Biolinguistics and Biosemiotics: a synthesis.

I enjoyed very much reading it. As I am neither a semiotician nor a linguist, I cannot quibble you about details, but it looks very well argued and convincing. As you know, I criticize the compartmentalization of science and think that any synthesis is welcome. As says the French proverb: l'union fait la force.

Besides the content of your paper, let me suggest two topics where a collaboration of biolinguistics and biosemioticians could be fruitful.

The first one is a linguistic study of genomes. Instructions for building a phenotype must involve some language. Genes specify proteins, i.e., basic building blocks, but their assembly needs to be described which necessarily involves some kind of syntax and semantics.

The second one is the understanding of the error-correction properties of human languages, and especially of speech. Although it is a very familiar phenomenon, we can (literally) understand each other in noisy surroundings, thanks to the many constraints of language which thus behaves as an error-correcting code.

As far as I know, no serious attempt to attack this problem has yet been made. It would need a collaboration of communication engineers, of course, but also of neurologists since the decoder is the human brain.

Thank you again, best regards

Gerard Battail

24

----- Original Message -----

From: "John Collier" <[collierj@ukzn.ac.za](mailto:collierj@ukzn.ac.za)>To: "Peter Cariani" <[cariani@mac.com](mailto:cariani@mac.com)> Cc: Mailing LIST

Sent: Monday, January 18, 2010 9:10 PM

Subject: Re: About coding and interpretation

I think Peter (Cariani) makes some good points here that need to be followed up.

My own view is that pragmatics is ground in lived life (others, like Stephen Cowley have made similar.

Meaning only comes through the sort of interpretation given by pragmatics Syntax alone is mechanical until it is integrated with pragmatic process. It aids the pragmatic processes that are found in autonomous system by allow for recursion (a bow to Victoria)

Sorry my comments have been fast and furious, but I have limited internet connectivity just as this was getting interesting.

John

25

----- Original Message -----

**From:** [Marcello Barbieri](#)**To:** New Mailing LIST (58 Members)**Sent:** Monday, January 18, 2010 2:27 PM**Subject:** A point from Chmsky

Dear Colleagues,

Noam Chomsky has just made the same point raised by Natalia (it is not true that syntax has nothing to do with meaning), and I have replied with the following letter:

----- Original Message -----

**From:** [Marcello Barbieri](#)**To:** [Noam Chomsky](#)**Sent:** Monday, January 18, 2010 2:07 PM**Subject:** Re: Consultation on Biolinguistics

Dear Professor Chomsky,

Three days ago, a Russian colleague (Natalia Abieva) asked me to consider the difference between these two phrases: (1) "A man came in", and (2) "In came a man".

That was enough for me to cancel from the paper the statement that "syntax has nothing to do with meaning". More precisely, the previous statement (lines 64-69 of draft 1):

"Chomsky focussed his attention on language and reached two outstanding conclusions: one is that syntax is the crucial component of the faculty of language; the other is that syntax has nothing to do with meaning. According to Chomsky, syntax is based on very general principles of economy and simplicity that are similar to the *Principle of Least Action* in physics and to the rules of the *Periodic Table* in chemistry. If that is true, there would be no semiotic features in the rules of syntax, and we would have to acknowledge that syntax has nothing to do with semiosis."

has been replaced by the following statement (lines 64-68 of draft 2):

"Chomsky focussed his attention on language and reached two outstanding conclusions: one is that syntax is the crucial component of the faculty of language; the other is that syntax is based on very general principles of economy and simplicity that are similar to the *Principle of Least Action* in physics and to the rules of the *Periodic Table* in chemistry. If that is true, syntax would be explained by universal laws of mathematics and physics, not by conventional rules."

I am sending draft 2 in attachment, but let me underline that only the first two pages need to be reprinted.

I do apologise for having reported an old cliché uncritically, and I assure you that I shall do my best to remove any other ambiguity, or misleading statement, that is brought to my attention.

Thank you for your letter.

Yours sincerely

Marcello Barbieri

26

----- Original Message -----

**From:** [Cowley, Stephen J](#)**To:** New Mailing LIST**Sent:** Monday, January 18, 2010 3:26 PM**Subject:** extreme individualism?

Dear All,

Marcello and I have had technical correspondence but, now he has dropped his claim that syntax is independent of meaning, we can discuss the **\*big\*** question.

For Chomsky, a newborn infant has a 'language faculty' in the brain (specifically, a capacity to use Merge).

Marcello pursues the view that this may depend on organic coding and thus risks losing sight of how language draws on cultural experience.

While taking part in language/languageing leads to functional reorganization of the brain (and probably did so in evolutionary time), we live language as meaningful –from birth (or before). It draws on dynamics or, in another idiom, is inherently indexical/iconic: indeed, I have argued that organic coding can be used (at least) to model such aspects of languaging (the 'feeling of thinking').

Should we begin with an inner language faculty (Chomsky's Internal language or, technically, the Merge 'operation')? Or does experience of language lead us to redeploy older brain systems? To allow for this, my colleagues and I stress how language is distributed. (See <http://www.psy.herts.ac.uk/dlg/>) If the individual's capacity for language draws on co-action, 'syntax' (and Merge) may be a historical product which, like logic, draws on a history of describing written texts. The language faculty pertains to the species –not the individual.

Best,

Stephen

27

----- Original Message -----

**From:** [Marcello Barbieri](#)**To:** New Mailing List**Sent:** Monday, January 18, 2010 4:35 PM**Subject:** Re: extreme individualism?

Dear Stephen,

I NEVER said that syntax is independent of meaning! What I said is that "ACCORDING TO CHOMSKY syntax is independent of meaning", and that is the statement that I had to rectify. The conclusion of my paper was in fact that ALL three components of the faculty of language - phonology, syntax and semantics - are based on codes and are therefore semiotic entities, i.e., entities dependent on codes, signs and meanings.

All the best

Marcello

28

----- Original Message -----

**From:** "Stephen Pain" <[st3pen@yahoo.com](mailto:st3pen@yahoo.com)>**To:** "Marcello Ba" <[brr@unife.it](mailto:brr@unife.it)>**Sent:** Tuesday, January 19, 2010 10:55 AM**Subject:** Biosemiotics and Biolinguistics

Dear Marcello,

I have followed these discussions with great interest. Firstly I would like to characterise the problem as to do with explanation hierarchy. Most of the biosemioticians are dealing with life at the lowest level of evolution, development and organization, whereas the biolinguists including Chomsky are working with life at the top end, primates and our hominid ancestors.

Secondly the discussion of what constitutes a code at the one level and at the other level is bound to be different, since in the former the codes are described from a top down position, whereas in the latter codes

are used in social and cultural communication. A cell cannot possibly understand the meaning of the genetic code or the various signalling systems - its world is limited - what is salient is very limited. However, for primates the world is either near-symbolic or symbolic, and meaningful. Semiosis is the process that takes life from its primordial state of bubbles or crystals to the usage of computers to type emails like this one. Questions asked of the how and why should be situated in strict biological and evolutionary terms, and these form the working boundary conditions of our enquiry. Of course, as I have said many times over, there is room in the theoretical sandbox to discuss much, but in the end one has to sift through these to meet the standards of what purports to be a methodology or study with applications in the natural sciences. With this in mind, Noam Chomsky's approach, and Thomas Sebeok, or even the grand masters, Jakob Uexkull and Charles Peirce, should serve only as guides, not as Gods.

All of them have written some quite nonsensical stuff - we all do - but we should recognise this not worship or build upon it. We cannot continuously write hagiographies like those for Saints or Lysenko. There should be rigour. I am currently by the way working on a project to model saliency detection in robots and animals. There at the interface of the quantity and quality, I see the rub, as Shakespeare would put it.

For reference - I have discussed explanation earlier:

<http://www.semioticon.com/semiotix/semiotix12/sem-12-02.html>

29

----- Original Message -----

**From:** João Carlos Major

**To:** New Mailing LIST

**Sent:** Wednesday, January 20, 2010 3:48 AM

**Subject:** About coding and interpretation

Dear All,

Relatively to the Marcello's draft and biosemiotics in general, I would like to say a few things:

1) It seems to me, as a clinical psychologist (not a biologist!), that our sense of self (and almost everything else in human life) unfolds throughout a plurality of "beginnings": it is a personal achievement, a recognition given to us by others (in a pre-linguistic game-like mutuality or turn-taking) that reflects a "inner" (or innate) affective/emotional "logic", and that logic shapes in a profound way our language ("the second-order consensuality" (Maturana)). Though, this evolutionary addition (that we claim turn ourselves into *humans*), by the mechanism of recursion detach ourselves many times from that profound affective (but "closed") "order"...

So, also in this sense, makes sense to me that the history of life can be divided into two great periods: 1) organic semiosis and 2) interpretive semiosis; complementary, yes, but *distinct*. Therefore, interpreting the "secondary modelling system" was a later evolutionary addition (cultural, conventional, a novelty, symbolic, not inherited, epigenetic, uniquely human, etc.) to the "first modelling system" reflects perfectly the Marcello's division between organic and interpretative semiosis, open us to the *distributed language* (Cowley) point of view and, to me - almost in a Vygotskian way - discredit completely Chomsky... or not?

2) The Marcello's division (between organic and interpretative semiosis) seems to me that has other advantage: sometimes, biosemiotics (ok, is not a unified field, I know) seems rubbing up against and, in a sense, adopting a transcendental perspective (*à la* Husserl, perhaps), when find inner logics/orders and continuities (teleology...?) in life. I have also a degree in (catholic) theology, but that point of view scares me because we can fall easily in the swamp of the "intelligent design"... and that doesn't please me; it would be the end of biosemiotics as a Science.

All the best,

João

## 30

----- Original Message -----

From: "Kalevi Kull" <[kalevi.kull@ut.ee](mailto:kalevi.kull@ut.ee)>  
 To: "João Carlos Major" <[icmajor@mail.telepac.pt](mailto:icmajor@mail.telepac.pt)>  
 Cc: New Mailing LIST  
 Sent: Wednesday, January 20, 2010 9:04 AM  
 Subject: Re: About coding and interpretation

*Reply to João*

Good.

Here, questions are also terminological.

(1) - When speaking about modelling systems, it is necessary to add whether "secondary" according to Lotman's or Sebeok's numbering? Anyway, in both cases (Lotman's 'culture', Sebeok's 'language') 'the secondary' have been meant as exclusively human.

(2) - Even in case of semiosis on vegetative (incl. cellular) level, codes with code-makers are not enough. What Jesper and Claus have called code duality, is not just two codes. In order to get life run, the codes have to be in a special configuration and integration - forming the life process, which has been called along the Peircean tradition an interpretation process.

(3) - We have written already quite widely (at least Anton, Jesper, myself) that life designs itself, whereas life is quite intelligent.

Best regards

Kalevi

## 31

----- Original Message -----

**From:** [Alexei Sharov](#)  
**To:** New Mailing LIST  
**Sent:** Thursday, January 21, 2010 9:25 PM  
**Subject:** Re: About coding and interpretation

Dear Marcello,

I attach my review of your paper "Biolinguistics and Biosemiotics: a synthesis".

The paper raises many interesting questions, and I enjoyed reading the paper itself as well as responses from biosemiotic community.

My main critical points are:

(1) Besides acquired language (human), there may be inherited language. Genetic language(s) is an example of inherited one. Correspondingly, there are acquired and inherited symbols.

(2) Separation of syntax, semantics, and pragmatics (after Morris) is often confusing because syntax is projected to semantics and pragmatics. "Pure syntax" is a rare thing.

(3) Higher animals are able to understand small portions of human language if they are forced to communicate with humans. Thus, the boundary is gray-scale.

(4) "Universal laws" are atavisms of Kantian worldview. Why bother?

(5) What indeed separates biolinguistics from biosemiotics is the lack of pragmatic aspect. Biolinguistics is not interested in actions (except vocal).

(6) The "code model" is not sufficient for semiosis because of the lack of pragmatics (i.e., no agents, no functions, no contribution to success or goal).

Cheers!

Alexei

32

----- Original Message -----

**From:** [Marcello Barbieri](#)**To:** New Mailing LIST**Sent:** Sunday, January 24, 2010 11:03 AM**Subject:** The organic codes hypothesis

Dear Colleagues,

Because of the comments that I have received, I have added a new section at the end of my paper in order to give a bird's-eye view of the organic codes hypothesis on the origin of the language faculty. Please find it in attachment, thank you. Best regards to all and many thanks for your comments.

Marcello

33

----- Original Message -----

**From:** [Søren Brier](#)**To:** New Mailing LIST**Sent:** Monday, January 25, 2010 1:20 AM**Subject:** RE: The organic codes hypothesis

Dear all

All along this discussion and ever since Marcello introduced "code" and "coding" as an essential paradigmatic term I have had problems understand the ways these terms are used. Because a code is normally something made by a conscious being relating a set of features in one domain to another set of features in another domain, features that is not naturally connected through a covering law. The relation is set up from a certain point of view in a limited domain. It is not universal as a natural law.

It is true that strict code functions law-like within the defined domains. This makes it possible for us to make codes that a machine - like a computer - can follow like rules without interpretation. I believe this is the fact that is the basis of Marcello's code-semiotics. Codes can be followed from below, mechanical so to speak, without interpretation.

But it seem to me that to claim they can be made without interpretation is a strange shift in the whole concept of codes. The idea has been introduced by a combination of the idea of self-organizing systems starting with Prigogine's dissipative structures and the physical concept of information coming from Wiener. Thus it seems that a self-organizing system unknowingly can create a coded relation inside itself or to something outside through natural evolution without any understanding of what it is doing or have done. I have trouble understanding this. I can see that the system can create regular patterns in one domain that can fit with regular patterns in another domain through evolutionary natural selection. But they cannot recognize this as codes. That is only us that have the opinion that it looks like the consciously made codes humans make. So, we have this strange idea of codes created from below or bottom up codes, like encryptions made by themselves unconsciously. But then they are not code in themselves, or what? But we can see them as codes pointing to a deep truth underneath.

But that is very different from Marcello's idea of codes in evolution. We sometimes say that the cell "reads" the DNA as a code. But that is a misuse of the concept of reading texts or a mind, which demands interpretation and consciousness. You will then have to switch to an idea of pragmatic interpretation, where the meaning is what the cell does on the basis of the DNA and RNA. But is that not a mechanical process like what the computer does when working on the basis of the codes in the programs we make for it? Did we not loose the quality of life somewhere in this operation then? I think so. Thus we lost what we wanted to explain in the process of making the explanation as scientific as possible and avoid a Peircean foundation. Thus I am back to the necessity of the Peircean foundation.

Venlig hilsen/best wishes

Søren Brier

34

----- Original Message -----

**From:** [Абиева Наталия](#)**To:** Mailing LIST**Sent:** Monday, January 25, 2010 6:55 PM**Subject:** Re: A new member in the Mailing List

Dear all,

Marcello has launched a very interesting discussion of a not easily crackable problem – how to bridge Biosemiotics and Biolinguistics. What I appreciate most is that it was a biosemiotician who initiated this polilogue. Unfortunately, there are some biologists that tend to establish a border between biology and humanities, as if humans were not a biological species...

We should not expect this issue to be made out soon as it is a really huge task, and I believe that only through the exchange of ideas we can shed light on it. Only if we stop being clannish and prejudiced against representatives of other sciences, we will be able to do it.

The letters of the last few days from Alexei Sharov and Søren Brier urged me to write again as there are some points that I, being primarily a linguist, would like to comment upon.

1) Alexei writes: «*Integration of Biolinguistics and Biosemiotic is indeed important because we need to agree on the general definition of language which can be applied beyond the human species. Another important question raised in the paper is whether humans are unique in the animal kingdom to develop a language*».

In my opinion, while trying to avoid ambiguities about the terms he suggests what can lead to that ambiguity. My comment concerns the general definition of language *which can be applied beyond the human species*. I am strongly opposed to the idea of expanding the initial meaning of the word LANGUAGE. We need to distinguish between the direct/ denotative meaning of the word (L. as «a means of interpersonal communication among humans via symbols») and its metaphorical usage. The word itself originated very early to define human natural languages but unfortunately nowadays by analogy it is used in different metaphorical meanings, among which are all sorts of artificial languages, the so called animal languages and what not. Barbieri is certainly right saying (and relying on T. Deacon here) that only humans use *that sort of symbols externally*. LANGUAGE proper, so to say, is a purely human invention, while genes being another example of symbols (Hoffmeyer, Sharov, Witzany, Barbieri) are biologically inherited, which is of common knowledge nowadays. We need to adopt a point that only LANGUAGE is LANGUAGE, all other communicative codes are something else, no matter how sophisticated they may be with some animals. I do not think we need to devise some new term to define *the general definition of language which can be applied beyond the human species* either as all such terms we already have – it is semiotics terminology: signs (icons, indexes, symbols), types of relationship, communicative code systems, etc. It is this terminology, actually, that provides us with the common methodological basis whether we are biologists, computer scientists, linguists or sociologists. By ascribing extra meaning and functions to the word LANGUAGE we may find the reasoning misleading.

2) Another comment concerns Alexei's statement:

«*Based on the legacy of Saussure and Chomsky, language has three components:*

(1) *capacity to produce signs and perceive them (they can be viewed as 2 components)*

(2) *capacity to translate signs into meanings (semantics), and*

(3) *set of rules (algebra) that link sign structures with their meanings (syntax)*»

Language can neither produce, nor perceive or translate. All these processes are performed by the human mind with the help of Language as a code.

3) I cannot agree that *the idea of Morris to separate syntax, semantics, and pragmatics is so confusing*. Morris did not separate these components but defined the domains that are to be taken into consideration if we want to understand the mechanism of information exchange in living beings. It is a model, an approximation, that Alexei actually approves of as lawful means of scientific research. That structural model applied to the description of the sign process does not imply that the three aspects of the process should be taken separately. The process of sign generation and sign perception is dynamic, uniting in itself both discretion

and continuity. The process itself can take place only if the three mentioned characteristics are realized simultaneously.

4) Where I agree with Alexei is that pragmatics is the crucial issue in Biosemiotics and Biolinguistics. But he sees pragmatics as an obstacle, while I find it to be the domain where these two disciplines can be bridged. Linguistics should not be looked upon as an old good thing that remains unchanged, vice versa, modern linguists are extremely interested not only in social pragmatics (this paradigm was in 30 years ago) but cognitive sciences. Cognitive linguistics collaborates with cognitive psychology, cognitive anthropology etc., and nobody treats a language nowadays as a simple list of words that have meanings (or a lookup table in Alexei's phrasing). The processes of sense computation and mental processes ensuring it are important for modern linguistics, as well as actions lying at the base of mental representations. That means that language is believed inseparable from the bodily activity of humans in certain environments, and language patterns are dependant on situations – embodied, embedded cognition.

The idea that pragmatics is crucial in bridging Biosemiotics and Biolinguistics has been mentioned more than once in that discussion. I can only agree with Søren Brier that the pragmatic interpretation is what distinguishes living organisms from different mechanical processes. The ability to interpret and to extract meaning that might be useful for vital functions makes live matter specific and different from non-live.

With best regards,

Natalia Abieva

Herzen State Pedagogical University,  
St Petersburg

35

----- Original Message -----

**From:** [Günther Witzany](#)

**To:** [Абиева Наталия](#)

**Cc:** Mailing LIST

**Sent:** Monday, January 25, 2010 8:06 PM

**Subject:** Re: A new member in the Mailing List

Dear All!

As I mentioned in all my publications its the primacy of pragmatics which determines meaning. It determines deep grammar in utterances with sentences or gestures or any comparable sequences as well as sign-mediated interaction (i.e. communication) between cells, tissues, organs and organisms of any organismic kingdom, as well s genetic content arrangements which long have been suggested to derive from errors "chance mutations", but now are investigated as arrangements of competent genetic content-operators. Its the pragmatic situation in which real sign-users are interwoven which determines the meaning of sign-sequences. Without sign-using living agents no natural language is spoken. Mathematical theories of language didn't and doesn't reflect on the crucial role of pragmatic interaction contexts and therefore are inappropriate to investigate or even define "language". We should agree in these current empirical insights to avoid further metaphysic positions such as solipsism and/or objectivism.

Best Wishes

Guenther

36

----- Original Message -----

**From:** [Marcello Barbieri](#)**To:** Mailing LIST**Sent:** Wednesday, January 27, 2010 9:51 AM**Subject:** On the premise of the consultation

Dear Colleagues,

This consultation had the purpose to discuss the proposal that the organic codes provide a bridge between biosemiotics and biolinguistics, but some of you have contested the very premise of this proposal, the idea that there are two distinct types of semiosis in Nature, one based on coding and one based on interpretation. Søren Brier, in particular, has claimed again that semiosis is either interpretive, and therefore Peircean, or is no semiosis at all. The implication, clearly, is that the premise of the proposal is wrong, so it is not worth discussing it.

In such a situation, I must underline that the premise of the proposal is absolutely correct because it is based on two outstanding experimental facts and two outstanding conclusions from them.

The two outstanding facts are these:

(1) The presence of molecular adaptors allows us to prove the existence of the genetic code and of many other organic codes in living systems (splicing codes, signal transduction codes, etc.).

(2) Genes and proteins are manufactured by molecular machines, and their manufacturing processes ARE semiotic processes because they depend on sequences, and sequences have the defining characteristics of signs and meanings because they are copymaker-dependent and codemaker-dependent entities.

The two outstanding conclusions are these:

(a) The two basic processes of life are the copying of genes and the coding of proteins, so it is perfectly legitimate to assume that organic coding is a fundamental process in all living systems, especially when we realize that coding takes place at many different levels.

(b) It is also perfectly legitimate to assume that entities like interpretation, intentionality and consciousness arose only in nervous systems, because they require internal representations of the world and two distinct types of meaning (sense and reference). It makes perfect biological sense, in other words, to say that during the whole three thousand million years of cellular evolution that was only coding semiosis in the world, and that interpretive semiosis came into being only with the origin of animals.

The idea that there are two distinct types of semiosis, in short, is a sound hypothesis, and the argument that “there is only one semiosis in the world and Peirce is its prophet”, is just a dogmatic attempt to delegitimize a perfectly legitimate idea.

The premise of the proposed discussion, in conclusion, is valid, so let's can get on with it.

All the best

Marcello

37

----- Original Message -----

**From:** [Alexei Sharov](#)**To:** New Mailing LIST**Sent:** Tuesday, January 26, 2010 11:09 PM**Subject:** Re: The organic codes hypothesis

Dear Marcello,

You proposed a very interesting idea that new levels of organization emerge due to novel levels of coding rather than just by increasing of the number of elements in already existing coding systems.

This idea challenges my earlier paper where I tried to measure functional complexity of organisms by the size of their non-redundant functional genome

<http://home.comcast.net/~sharov/pdf/GenomeIncrease.pdf>

However, new coding systems (e.g., histone code, signal transduction) are represented in the genome by new families of genes. So, I think, my approach is not that bad after all. But I agree that the emergence of new coding systems is indeed important.

But I do not like the term "organic code" because the word "organic" is either associated with organic farming and manure or with organic chemistry. None of these associations is inspiring.

I agree that coding systems are important for semiosis, but why do you try to reduce semiosis to coding (you wrote that code-based model is sufficient)?

Also it is questionable if "code-based" model of semiosis differs from the "interpretation model" by the presence of codes. Although we do not know the mechanisms of mental interpretation, but we cannot rule out that they are also based on some codes, perhaps more complex than the genetic code. So, may be the difference is mostly in the complexity and multiplicity of codes?

But I agree with you that molecular semiosis is very different from mental semiosis; therefore we need to find good criteria and terms to distinguish them.

You did not reply to my earlier message where I argued that there is a genetic language which is inherited but cannot be learned in the same way as we learn human languages. This idea was proposed by Howard Pattee, and I fully support it. I would like to hear your opinion.

Alexei

38

----- Original Message -----

**From:** [Marcello Barbieri](#)

**To:** New Mailing LIST

**Sent:** Wednesday, January 27, 2010 10:56 AM

**Subject:** Replying to Alexei Sharov

Dear Alexei,

Here is my reply to your questions.

(1) "... (your) idea challenges my earlier paper where I tried to measure functional complexity of organisms by the size of their non-redundant functional genome"

I don't see any contrast. The rules of the organic codes must be reconstructed in every generation and must therefore have either a genetic or an epigenetic basis. What is lacking in your proposal, in my opinion, is a link between complexity and codes, but that does not turn it into wrong idea.

(2) "I do not like the term "organic code" because the word "organic" is either associated with organic farming and manure or with organic chemistry. None of these associations is inspiring."

The association with "organic manure" had never occurred to me, but in any case I don't regard it as a reason for abandoning a word that just represents reality. Life IS made of organic molecules, and a code between organic molecules IS an organic code. It would be like saying that we should not use the term "atomic" because it is associated with the "atomic bomb".

At any rate, I use the terms "organic semiosis" and "coding semiosis" practically with the same meaning, so if you don't like the first term you can use the second.

(3) "I agree that coding systems are important for semiosis, but why do you try to reduce semiosis to coding (you wrote that code-based model is sufficient)?"

I have said that coding semiosis is sufficient only at the cellular level. I have repeatedly underlined that the origin of animals was a true macroevolutionary events precisely because it gave origin to a new type of semiosis, i.e., to interpretive semiosis. I never said, in other words, that Peirce is wrong. All I said is that Peircean semiosis is valid only in animals. I am strongly against the idea that there is a Peircen mind in every cell. That is what makes biologists run away from biosemiotics.

(4) "You did not reply to my earlier message where I argued that there is a genetic language which is inherited but cannot be learned in the same way as we learn human languages."

I did not reply because I entirely agree with that idea but I didn't understand why you used it as an argument against my proposal. I just took it as a criticism for the sake of criticism, that's all.

Best regards

Marcello

39

----- Original Message -----

From: "Anton Markos" <[markos@natur.cuni.cz](mailto:markos@natur.cuni.cz)>

To: Mailing LIST

Sent: Wednesday, January 27, 2010 10:41 AM

Subject: Re: On the premise of the consultation

Greetings to all

Just one point to the previous quotation:

"The idea that there are two distinct types of semiosis, in short, is a sound hypothesis, and the argument that "there is only one semiosis in the world and Peirce is its prophet", is just a dogmatic attempt to delegitimize a perfectly legitimate idea."

OK Marcello, but your axiom "no interpretation without nervous system" seems to many even more dogmatic. Especially when you don't explain what you really mean by "interpretation" and how you distinguish it from simple "decoding".

For me, and I feel that for many, the expression "semiosis without interpretation" looks simply nonsensical - in spite of many years of effort you invested into the topic, in spite of many discussion we had together. Because I admit the possibility of being wrong or simply a softhead, I haven't participated in discussions like this one and I will not reenter them before I settle the point to me (I am trying!)

Best

Anton

40

----- Original Message -----

**From:** [Marcello Barbieri](#)**To:** Mailing LIST**Sent:** Wednesday, January 27, 2010 11:49 AM**Subject:** Replying to Anton Markos

Dear Anton,

Here is what I have to say:

(1) "OK Marcello, but your axiom "no interpretation without nervous system" seems to many even more dogmatic.

An axiom is dogmatic when it is not based on testable arguments. I have given at least two arguments in favour of my hypothesis (internal representations, and two types of meaning), and they can be falsified, so I do regard it as a valid scientific hypothesis. The idea that the cell is capable of interpretation, on the other hand, is normally based on the fact that cells have a context-dependent behaviour, but this is much more easily explained by that the presence of many organic codes so it is not a good argument.

(2) "...Especially when you don't explain what you really mean by "interpretation" and how you distinguish it from simple "decoding".

But I have explained it! And in many occasions, including this round of discussions. See for example the letter that I wrote on January 15 in reply to that very question by Morten Tonnessen. Please find that letter in attachment.

(3) "For me, and I feel that for many, the expression "semiosis without interpretation" looks simply nonsensical "

No more nonsensical than the idea that a particle can behave like a wave and a wave like a particle.

What you should ask yourself is "could it be true?", or "how can we find out?"

All the best

Marcello

41

----- Original Message -----

**From:** [Cowley, Stephen J](#)**To:** Mailing LIST**Sent:** Wednesday, January 27, 2010 10:55 AM**Subject:** RE: On the premise of the consultation

Dear All,

The consultation opens up new connections -and new contrasts.

With Marcello, I judge it of value to posit that: "there are two distinct types of semiosis in Nature, one based on [organic] coding and one based on interpretation." Others think use of 'semiosis' is best restricted to what can be described in Peircean terms. Fair enough.

Yet while Marcello invokes coding to 'explain' Chomsky's narrow faculty of language (recursion or Merge), like others, I deny that such a 'faculty' exists.

Languaging, we say, is explicable by pragmatics and the evolution of interpretation. (The faculty of language is 'broad' it is like 'faculties' for cooking, boxing or music). Interaction gives rise to what we call recursion because of how bodies use the brain's developing hierarchical control structures: no new codes are required. Languages (not language) belong to -not to biology -but to history. Indeed, this may be why Sebeok turned to Peirce. For me, that is insightful. I suspect I am not alone.

Best,

Stephen

42

----- Original Message -----

**From:** [John Collier](#)**To:** New Mailing LIST**Sent:** Wednesday, January 27, 2010 10:49 AM**Subject:** Re: On the premise of the consultation

At 10:51 AM 2010/01/27, Marcello Barbieri wrote:

[Dear Colleagues, This consultation had the purpose to discuss the proposal that the organic codes provide a bridge between biosemiotics and biolinguistics, ..... etc.](#)

I think the problem, Marcello, is that people like Søren think that coding alone is not fully semiotic, and does not use signs except in the rather degenerate sense of indices. Indices (indexes) can be understood fully causally in terms of binary relations, and hence are fully reducible. This is all in Peirce, so in a sense he anticipated the "two types of semiotics". There is a third, involving qualities or qualia, but it is completely degenerate, as qualia cannot be projected without further relations, which takes us at least to indices.

Nonetheless, qualia are signs. That something is a sign, then, may or may not be interesting. However the methods of semiotics are only required, rather than perhaps a useful, perhaps misleading, way of looking at things, when there is interpretation required. Hence the scepticism about your approach really being semiotic, and the questioning of its adequacy if there really is molecular semiosis, for example.

I think that there is a good case that organic codes only make sense as codes (rather than merely their reduction to binary causal relations) in the context of biological function (Stefan Artmann has argued similarly, though I differ with him on the best way to approach function). I argued this more generally at Syros. This gives a form of interpretation, and thus changes the codes into exactly the sort of structure that Søren was arguing for. Thus I think he is correct, and that you are wrong.

There is no special Peirce worship going on here. Peirce already described the form of semiosis you are arguing for. Some of us feel, however, that your account is not explanatorily adequate. I think you smuggle in ideas of interpretation without properly acknowledging them. I've argued this in [Information in biological systems](#) (Handbook of Philosophy of Science, vol 8, [Philosophy of Information](#), 2008, Chapter 5f), which you saw a late draft of. Perhaps I am wrong, but then I really do think that your organic codes approach no more needs semiotics than the study of the solar system.

Regards,

John

43

----- Original Message -----

**From:** [GMail](#)**To:** [Marcello Barbieri](#)**Cc:** Mailing LIST**Sent:** Wednesday, January 27, 2010 12:51 PM**Subject:** Re: Replying to Anton Markos

Dear participants of discussion,

I watch closely a discussion course. I do not join in it as we have passed in the former USSR through all these discussions in 1970th .

Then discussion was more riid and more responsible - for protection of the position it was possible to become a victim of political reprisals or the patient of retaliatory psychiatry.

But this is very weak!

With best regards

Sergey Chebanov

44

----- Original Message -----

**From:** [Marcello Barbieri](#)**To:** Mailing LIST**Sent:** Wednesday, January 27, 2010 4:00 PM**Subject:** Replying to John Collier

Dear John,

(1) "I think the problem, Marcello, is that people like Søren think that coding alone is not fully semiotic, and does not use signs except in the rather degenerate sense of indices.

I am sorry, John, but that cannot be the case. The genetic code is based on codons, and these are signs because they are codemaker-dependent (if the nucleotides of the same messengerRNA were read two-by-two the sequence of codons would be totally different). But the correspondence between codons and amino acids is neither iconic nor indexical. It is FULLY symbolic, so, once again, the genetic code IS a real code. And there is a real codemaker inside the cell (the ribotype) which proves that the cell really is a triadic system (genotype-phenotype-ribotype) and a fully semiotic system.

(2) I think that there is a good case that organic codes only make sense as codes ... in the context of biological function ... This gives a form of interpretation, and thus changes the codes into exactly the sort of structure that Søren was arguing for. Thus I think he is correct, and that you are wrong.

The use of codes in terms of function means that the cell must integrate the activity of all its codes in order to have a unitary behaviour. I have already mentioned that the integration of the genetic code with a signal-transduction code is enough to give the cell a context-dependent behaviour (in the sense demonstrated by Jacob and Monod in the regulation of protein synthesis). But the integration of various coding activities is still a coding-decoding activity, it is NOT interpretation (again in the sense that interpretation requires acting on representations etc. etc.).

(3) Peirce already described the form of semiosis you are arguing for.

If you intend to say that Peirce described icons, indexes and symbols, you are right. I am using exactly the same types of signs. In you intend to say that I am describing the cell in Peircean terms, i.e. with an interpreting mind inside it (or all over the Universe), you are wrong.

(4) "Perhaps I am wrong, but then I really do think that your organic codes approach no more needs semiotics than the study of the solar system."

My approach needs copying and coding, which lead to natural selection and natural conventions as the two fundamental processes of life, and you do NOT need natural selection and natural conventions to study the solar system. Yours is a cheap strike, John, and frankly I did not expect anything so out of place from you.

Yours

Marcello

45

----- Original Message -----

**From:** [John Collier](#)**To:** Mailing LIST**Sent:** Wednesday, January 27, 2010 4:56 PM**Subject:** Re: Replying to John Collier

(1) I am sorry, John, but that cannot be the case. The genetic code is based on codons, ...but the correspondence between codons and amino acids is neither iconic nor indexical. It is FULLY symbolic..."

(1) So you say, but I think your claim that it is symbolic does imply that there are not two types of semiosis.

(2) "... the integration of various coding activities is still a coding-decoding activity, it is NOT interpretation (again in the sense that interpretation requires acting on representations etc. etc.).

(2) There is no "acting on representations" in Peirce. Interpretation is what you describe in his work, even in the case of what we often call representations. See, for example, [Questions Concerning Certain Faculties Claimed for Man](#), Journal of Speculative Philosophy 2 (1868), pp. 103-114 ([html version](#)). This is followed up in more detail in the article [Some Consequences of Four Incapacities Claimed For Man](#), Journal of Speculative Philosophy 2 (1868), pp. 140-157. ([html version](#)). I am beginning to think this debate is all based on a big mistake of Peirce interpretation.

(3) If you intend to say that Peirce described icons, indexes and symbols, you are right. I am using exactly the same types of signs. In you intend to say that I am describing the cell in Peircean terms, i.e. with an interpreting mind inside it (or all over the Universe), you are wrong.

(3) No, your interpretation of Peirce is wrong. There are minds of course, but they use exactly the same form of semiosis as anything else.

(4) My approach needs copying and coding, which lead to natural selection and natural conventions as the two fundamental processes of life, and you do NOT need natural selection and natural conventions to study the solar system. Yours is a cheap strike, John, and frankly I did not expect anything so out of place from you.

(4) Well, I thought that you were proposing some sort of difference in kinds of semiosis. With more detail it appears that you actually were not, and that your claim that you were was based on a misunderstanding. I hope that the issue is clear, or at least more clear now. Regards,  
John

46

----- Original Message -----

**From:** [Marcello Barbieri](#)**To:** Mailing LIST**Sent:** Wednesday, January 27, 2010 5:46 PM**Subject:** Replying to Stephen Cowley

Dear Stephen,

I am glad that you have started talking about Biolinguistics, but I confess that what you say puts me in an uncomfortable position.

I have proposed a way of reconciling Chomsky with Biosemiotics, but now you say that you want to get rid of Chomsky, and this implies that my project is not worth pursuing.

Fair enough. I respect your position, and I have many sympathies for your "Distributed Language" idea. In my paper, as you know, I have acknowledged it, and accepted that there must be a "distributed codemaker" in language. But I do believe that it makes sense to talk of a "faculty of language", whereas you "deny that such a 'faculty' exists".

To me, at any rate, the convergence between Biolinguistics and Biosemiotics represents the very future of both fields. Only that will give us a unified science of language. Perhaps there will be something else thereafter, but I want to reach that stage first, and then discuss where we can go from there.

For the time being, therefore, I have a more conservative project than yours. I want to recover all that is good in Chomsky and combine it with all that is good in Sebeok, whereas you are flying above and beyond both of

them. Good luck to you, but I am staying behind. I shall keep searching for the nature, the origin and the evolution of the “faculty of language”. All the best  
Marcello

47

----- Original Message -----

From: <[ssalthe@binghamton.edu](mailto:ssalthe@binghamton.edu)>

To: New Mailing LIST

Sent: Wednesday, January 27, 2010 3:53 PM

Subject: Re: On the premise of the consultation

Marcello -- In my view, your proposal implies that machines should be taken to be semiotic.

This is because all that you describe in the cell is a (complicated) machine.

This is because no interpretation is acknowledged.

I think there can be no semiosis without interpretation. BUT, interpretation, in my view can be generalized into abiotic systems, by way of a triadicty set up by way of seeing CONTEXT as the most general mediator of interpretation.

Our sciences have become wedded to mechanismism, and your thinking comes out of that perspective.

The mechanismism here is located in science's thought restriction to two-valued logic. The next step ought to be to rethink science discourse in terms of fuzzy logic, just as a FIRST step.

STAN

48

----- Original Message -----

From: [Marcello Barbieri](#)

To: Mailing LIST

Sent: Wednesday, January 27, 2010 6:34 PM

Subject: Replying to Stanley Salthe

Dear Stanley,

(1) [In my view, your proposal implies that machines should be taken to be semiotic.](#)

In my previous reply to you and to Morten I have already said that a computer is NOT a semiotic system because it has no internal codemaker. That is what makes all the difference between machines and living systems. Machines will become semiotic only when they will have an embryonic development that generates them from within and not from without.

(2) [“I think there can be no semiosis without interpretation.](#)

The genetic code is used for manufacturing purposes NOT for interpreting purposes. First you must be alive, and then, when you are complex enough, you can start interpreting the world around you.

(3) [“Our sciences have become wedded to mechanismism, and your thinking comes out of that perspective.](#)

If mechanismism means looking for rational explanations, I plead guilty. But remember that Quantum mechanics IS mechanismism, fuzzy logic IS mechanismism, etc. Understanding life is understanding what make living systems tick and that IS mechanismism. Mechanismism is looking for workable models of reality, and in that sense, yes, I am a mechanist.

All the best

Marcello

49

----- Original Message -----

**From:** [Søren Brier](#)**To:** New Mailing LIST**Sent:** Thursday, January 28, 2010 10:46 AM**Subject:** RE: On the premise of the consultation

Dear Marcello

You did not answer my questions. How can a non-living and later a non-conscious system make codes? Is not the usual concept of code something that a conscious system construct? So what is code for us are just laws and rules for a computer that it obeys blindly. Is that situation different for a cell in your paradigm? How do you get from codes to meaning and consciousness in evolution? How are codes helping us understanding that? These are honest question on something I do not understand.

I do see that in evolution some constraints happens in self-organizing system's behaviour, about which we can say, that if we had made that ,it would be a code. But what is it for the living system other than a structural change (structural coupling) that directs it behaviour in certain regular was. Such an answer leads more in the direction of the way that Maturana and Varela formulated the concept of autopoiesis, where they carefully avoided the whole language of "information" and "coding" in order not to get attached to the information processing paradigm evolved from computer science.

Is that the paradigm you want to build on? Because - as far as I can see - what has happened is that computer science and informatics is trying to naturalize concepts that they have created in the world of human artefact construction and that the only metaphysics that fit to that is the idea of the world as one grand computer, which is what Gregory Chaitin and other suggests.

If you do not want to involve a concept of God (somebody has to make the machine) then you have to develop a theory of self-organizing machines. I know people that thinks that such machines will develop inner awareness and qualitative experiences. But there is not a shred of evidence that this will be the case and no theory that attempts to explain how other some vague idea of "emergence" that will happen in ways we do not understand. AI and the pan-computational paradigm have not developed a theory of meaning, qualia and the agency of first person consciouness. There is then thus nothing to lead us from the code semiosis to sign semiosis if I have understood your theory right.

If this paninformational paradigm is not the paradigm you are building on to give your concepts meaning, then what is it, since it is certainly not Peircean? I expect that you are trying to develop a third way, but I do not see clearly what it is? Autopoiesis was such an attempt, which is not yours either, but my analysis have also shown that it is unable to develop a concept of meaning and consciouness too.

The Chomsky theory of language has the same problems with meaning as it is heavily focused on syntactics. Thus in itself it cannot understand the production of meaning, but need a theory of the embodied conscious human being in cultural interaction with others to be able to function. In itself chomskian language theory does not provide such a theory. But that is what biosemiotics in my opinion is supposed to do.

Venlig hilsen/best wishes  
Søren Brier

50

----- Original Message -----

**From:** [Marcello Barbieri](#)**To:** Mailing LIST**Sent:** Thursday, January 28, 2010 5:34 PM**Subject:** Replying to Soren Brier

Dear Søren,

This consultation was about a convergence between Biolinguistics and Biosemiotics, and from your email I understand that you are against it. That is all I wanted to know, thank you.

You also keep asking me to answer your questions, but I have already told you many times that I cannot do that. I do not have all the answers. The exploration of the new continent of the organic codes is only at the very beginning, and we have learned that what we cannot speak of we better be silent about.

I can only call your attention to four points.

- (1) The genetic code came as a complete surprise, in the literal sense that nobody predicted it. Not only Darwin and the neo-Darwinists, but also the neo-vitalists, the emergence people, the holistic people etc. All of them failed to predict the code. And the same is true for the pioneers of Biosemiotics. Von Uexküll did NOT predict the code, Peirce did NOT predict the code. None of their followers predicted the genetic code!
- (2) That totally unexpected discovery requires, in my opinion, a totally new concept, and I am convinced that that new concept is organic semiosis, the idea that semiosis can exist without interpretation. John Collier claims that all my concepts come from Peirce ("Peirce already described the form of semiosis you are arguing for"), but Sebeok made it clear that Peirce semiosis is inextricably linked to interpretation (But I don't want to argue about priority. If it is true that Peirce predicted semiosis without interpretation, than I am a Peircean, and that's the end of it).
- (3) Just as we were unprepared for the discovery of the code, we are equally unprepared for the idea that semiosis can exist without interpretation, and that is the cause of all our misunderstandings. I keep hearing "how can a machine do that?", because all we know are machines that are built from without, by ourselves. We seem unable to conceive a machine that builds itself from within. And that is why some people keep saying "there must be a mind inside it!".
- (4) What I know is that a system with a genetic code is a system where all components can change, but those that change the code are eliminated. In a way this is a top-down principle, because it puts a constraint on the mutations that can survive at the molecular level. This amounts to saying that a living system has two imperatives: (1) all the instructions to build the components of the system must be copied, and (2) all components of the system can change except those of the genetic code. The whole logic of a living system, in short, is centred on the copying of its components and on the conservation of the code that is used to build those components. That is why I concluded that copying and coding are two distinct principles. One works at the individual level of the components, the other at the collective level of the whole system. Copying and coding. Natural selection and natural conventions.

That is all I can say, so please stop asking questions that I cannot answer. Thank you.

Best regards

Marcello

51

----- Original Message -----

**From:** "Weber, Bruce" <[bhweber@Exchange.FULLERTON.EDU](mailto:bhweber@Exchange.FULLERTON.EDU)>**To:** Last Mailing LIST**Sent:** Thursday, January 28, 2010 6:48 PM**Subject:** RE: Replying to Soren Brier

Dear Marcello, Soren, et al.:

It seems to me that the problems of codes and interpretation and internal/external construction that you are addressing can be most perspicuously addressed by developing a scientific (and philosophical) account of emergence; such an account, it seems to me needs semiotics in order to be robust and complete.

Best wishes,

Bruce

52

----- Original Message -----

**From:** [Alexei Sharov](#)**To:** Mailing LIST**Sent:** Thursday, January 28, 2010 10:02 PM**Subject:** On machines and organisms

Dear Søren and Marcello,

May be we need to rethink the metaphor connecting organisms and machines.

Traditional cybernetics says: **organisms are as simple as machines**

As we know, this metaphor does not work well because organisms develop meanings whereas machines don't.

May be we should revert the metaphor: **machines can be as complex as organisms**

Although most machines that we build are indeed too primitive and process information without interpretation, it does not mean that autopoietic machines are impossible.

Technology is a functional envelope of human society, and in this sense it is alive.

Similarly, our body is a functional envelope of germ cells, and a cell is a functional envelope of DNA.

Agents are produced only by agents of comparable or higher level of functional complexity. Thus, the thesis "life from life" can be extended to the thesis "agents from agents".

Machines are mostly encoded in human brain, but eventually some (or all) of these codes will be transferred to machines and they will become partially or fully autopoietic.

Similarly we can handle the relationship between the brain and cellular chemistry.

Marcello is convinced that there is no brain in the cell, only codes. Note, that we do not have a definition of brain on which we agree! But a metaphor can help to bridge the gap.

I like the metaphor that **nucleus is the brain of the cell**. It carries both long-term and short-term memory, it has logical gates and much more complex autonomous regulatory modules. Is it anthropomorphism? I don't think so.

Drawing a line between code model of semiosis and interpretation model takes us back to the dualism of man and nature (although in this case it will be animals with brains versus brainless plants, fungi, protozoa, and bacteria). Why not to look at them as stages within a continuous spectrum of semiotic and functional complexity?

I agree with Bruce Weber who wrote that we need a notion of emergence. A bacterial cell is probably too simple to observe any emergence within its short life span. But a population of bacteria traced over days and weeks can adapt to its environment and exhibit emergent features. May be one machine is not sufficient to observe emergent properties, but a population of self-reproducing machines (Venter is working on it!) may exhibit some primitive forms of emergence.

-Alexei

53

----- Original Message -----

**From:** [Marcello Barbieri](#)**To:** Mailing LIST**Sent:** Friday, January 29, 2010 9:04 AM**Subject:** Second reply to Alexei Sharov

Dear Alexei,

Your wrote:

"Marcello is convinced that there is no brain in the cell, only codes. Note, that we do not have a definition of brain on which we agree! But a metaphor can help to bridge the gap. I like the metaphor that **nucleus is the brain of the cell**. It carries both long-term and short-term memory, it has logical gates and much more complex autonomous regulatory modules. Is it anthropomorphism? I don't think so."

I am sorry, but you keep attributing to me exactly the contrary of what I have said.

Let me just draw your attention to two papers where I mention explicitly the metaphor that **“the nucleus is the brain of the cell”** :

- (1) Barbieri, M. (1993) Riboskeleton and Cytoskeleton.  
*Rivista di Biologia-Biology Forum*, 86 (3/4), 324-325.  
 (2) Barbieri, M. and Maraldi, N.M. (1993).The riboskeleton: the “brain” of the cell?  
*Rivista di Biologia-Biology Forum*, 86 (3/4), 361-375.

What I said is that the cell does NOT build internal representations of the world, but that does not mean that it is without a ‘brain’. On the contrary, just as there is semiosis without interpretation in the cell, so there is a ‘brain’ without representations. And that ‘brain’ is the ribotype, of course.

Lets go back to your statement:

**“Marcello is convinced that there is no brain in the cell, only codes”**

How many times have I said that there cannot be codes without a codemaker, and that the ribotype is the codemaker (the ‘brain’) of the cell?

I am getting used to this sort of misunderstandings by now, but I confess that I still find them annoying (to put it mildly).

Marcello

54

----- Original Message -----

From: <[ssalthe@binghamton.edu](mailto:ssalthe@binghamton.edu)>

To: "Alexei Sharov" and Mailing List

Sent: Thursday, January 28, 2010 10:41 PM

Subject: Re: On machines and organisms

Here I comment on Alexei's statement below.

What is implied by Alexei's statement is that everything, including living systems, can be reduced to mechanistic configurations. What this ignores is the difference between a territory and its map.

The map is NOT the territory (Bateson). All machines can be represented in logical sequences, digitally, or as maps. Maps -- even detailed blueprints -- leave out an immense amount of information, as do digital sequences as representations of material things. It could be said that maps and digital sequences depend upon aspects of the material world NOT included in their descriptions in order to be realized.

Thus, idealism covertly relies upon materialism.

Pursuing further a point I tried to make yesterday, we know that mechanistic (logical) models of restricted aspects of the world can be used to gain some control over the limited regions of the world being modeled. But this is no longer held by philosophers of science to reflect truth about that region.

If we take various logical models of different regions of a system and try to connect them into a larger model of the whole thing, my point was that the complication would become unmanageable, as mutations would begin happening so quickly, including in the repair functions, that such a, logically constructed, system would soon fall apart.

The basic flaw, again, I think lies in Gödel's incompleteness theorems. Machines, other than the very simplest, being logical, cannot be both complete and fully consistent. But we see nothing reminiscent of this in living systems. Scientific maps are logical, but living systems are NOT known to be.

I submit that what Marcello deals with are logical models of various parts of the living cell, but not with a representation of the cell itself as a whole.

A further implication of my view is that no A-Life will ever be produced as long as the models used to think with are restricted to being compatible with fully explicit, crisp two-valued logic.

STAN

55

----- Original Message -----

**From:** [Koichiro Matsuno](#)**To:** Mailing List**Sent:** Friday, January 29, 2010 3:15 AM**Subject:** RE: On machines and organisms

Folks,

One interesting example for the contrast between code and interpretation is time.

Kepler applied Ptolemy's sidereal time to interpret and express the planetary motion in ellipses with the sun in one focus. Time here is an interpretation of some correlated and complicate movements (interpreted by whom and how?). Once time is taken as an abstract from the correlated movements and conceived as a code, then classical mechanics would emerge. However, the founders of classical mechanics were familiar with the abstract nature of time, that is, a strange handshake with their archenemy Ptolemaeus through interpretation.

Cheers,

Koichiro Matsuno

56

----- Original Message -----

**From:** [Peter Cariani](#)**To:** [Koichiro Matsuno](#)**Cc:** Mailing List**Sent:** Friday, January 29, 2010 5:02 AM**Subject:** Re: On machines and organisms

Dear everyone,

It's hard to keep up with the flow of the discussion (time is short for me these days), but here are some comments.

Re: organisms and machines and codes, it is possible to describe SOME aspects of biological organisms in terms of state-determined, rule-obeying/implementing processes. For example, the mapping of nucleotide codons to amino acid residues can be described in terms of rule-governed syntactic mappings between one set of states (nucleotide sequences) and another (amino acid sequences).

We are justified in calling this a CODING relation because it can be so described (given the appropriate observational, descriptive framework/perspective). Obviously, most processes in organisms (e.g. protein folding) are not amenable to this kind of description, and therefore one is not justified in describing those processes in terms of syntactic operations on token types.

My point here is that semiotic relations are not restricted in any way to biological organisms. We can apply the same observational and analytic frameworks to deal both with natural organisms and artificial devices. They can have syntactic relations if there are mechanisms (such as transcription-translation mechanisms) that map one set of discrete states (molecular sequences) to another.

They can have semantic relations if there are mechanisms (such as sensors and effectors) that translate contingent interactions with the world and discrete internal states. The semantics of a robot's touch/pressure sensor are the linkage of the sensor with the joint relation of the sensor to the rest of the world.

They can have pragmatic relations if there are goal-seeking mechanisms. The pragmatics of particular operations involve the relations of those operations to realization of embedded goal states. For example, the detection of the location of a power source for a Roomba autonomous housecleaning robot has pragmatic relevance in terms of the robot's achieving the goal of recharging itself.

Some specific points --

1. The genetic code was not a complete surprise -- von Neumann's kinetic self-replicating robot scheme and Schrodinger's aperiodic crystal presaged the idea of universal codes for self-construction.

Many biologists long before the 1950's were thinking that there had to be a common mechanism for inheritance. Today, we are in the same boat vis-a-vis the neural code. There has to be a common mechanism for memory, and it has to be able to encode/decode all kinds of information that we can recall. I think that this means that the brain needs a lingua franca neural coding scheme of some sort (perhaps temporally coded) that self-organizes and expands its signal types over time (new concepts). Most neuroscientists either don't think about the problem or kick the can down the road and are happy to say that it has something to do with synaptic changes without thinking about the form of the messages that are stored.

2. The "traditional cybernetics" people did not think that organisms are machines in the sense of digital computers. This is just not true.

They did not regard them as "simple machines". Who exactly are we attributing these ideas to? They thought of them as complex analog feedback systems first, and there were many statements to the effect that they did not have the mathematics to describe the behavior of even simple neuromuscular reflexes and behaviors. Go back and read Wiener, McCulloch, Lettvin, Rosenblueth, Ashby, Walter, Pask, et al. They knew about Turing machines and Petri nets and all that, but they were not naive platonists (unlike the symbolic AI people and the "computational universe" people who superseded them), and knew that the map is not the territory, and although there may be a portion of the system that is amenable to rule-based description, there are always other, ill-defined aspects of a given system that are not described in a model (von Neumann).

I do agree, though, with Alex's point that complex machines can be constructed -- but I think these need to be mixed analog-digital devices. We need to revive the self-organizing systems paradigm.

I am wary of the connotations of "agents" because nowadays they more often than not mean software agents, and software agents may not be enough to get real creation of meaning.

I do see that in evolution some constraints happens in self-organizing system's behavior, about which we can say, that if we had made that ,it would be a code. But what is it for the living system other than a structural change (structural coupling) that directs it behavior in certain regular was. Such an answer leads more in the direction of the way that Maturana and Varela formulated the concept of autopoiesis, where they carefully avoided the whole language of "information" and "coding" in order not to get attached to the information processing paradigm evolved from computer science.

Soren Brier criticizes the use of terms like "information" and "code" as buying into the platonist, computer-science/symbolic AI worldview. But I think these terms are (and should not be) not exclusively owned by the platonists, and that they are very useful if we are talking about mixed analog/digital systems and we are careful in the way that we define and use our terms. I don't want to get bogged down in a discussion of the semantics of words -- I'd rather discuss concepts.

If you do not want to involve a concept of God (somebody has to make the machine) then you have to develop a theory of self-organizing machines. I know people that thinks that such machines will develop inner awareness and qualitative experiences. But there is not a shred of evidence that this will be the case and no theory that attempts to explain how other some vague idea of "emergence" that will happen in ways we do not understand. AI and the pan-computational paradigm have not developed a theory of meaning, qualia and the agency of first person consciousness. There is then thus nothing to lead us from the code semiosis to sign semiosis if I have understood your theory right.

As for consciousness, there are no ultimate explanations of why the world is as it is, i.e. questions of existence (why there is gravity, matter, light).

Chalmer's "hard problem" is a metaphysical, ontological problem that has no answer -- his "problem" is ill-posed if the expectation is that it will be resolved by empirical observations or scientific theory. The best we can do is to find bridge laws that predict our subjectively experienced states of awareness from organizations of matter (neuronal activity), and the emerging scientific study of consciousness is making tangible progress on this front. If you take conscious awareness as a fundamental aspect of the world, (and I do) but also believe that the physical world is closed under material causation (which I see no reason to dispute), then no theory of emergence will predict the appearance of consciousness (e.g. at some point in evolution where the requisite organizations of matter appear, possibly at the level of nervous systems that are capable of regenerating their own internal signals, possibly on levels below that -- this is a much longer discussion).

The appearance of consciousness is a profoundly emergent event in the sense that it could not have been predicted from what came before (assuming that a threshold organizational closure is what is required rather than some kind of panpsychic aspect of all parts of the universe), but it is this categorical and ontological unpredictability (really specific only to the emergence of consciousness) that makes a predictive theory of emergence of consciousness (or analogously higher levels of awareness) impossible.

I do think that there can be metatheories of emergent functions in material systems (what are the conditions that facilitate functional novelty?), but the observer-based (as opposed to the ontological) conception of emergence almost by definition precludes its use to predict emergent events.

If emergence involves the deviation of the behavior of a material system from an observer's model of it, then once the observer comes to expect an emergent event, it will no longer be unexpected (and emergent). Emergence-relative-to-a-model is a way of recognizing when an emergent event has occurred, but itself does not generate emergent events -- we need action from other, unmodelled physical processes for that.

I apologize for the length of this post.  
Peter Cariani

57

----- Original Message -----

**From:** [Marcello Barbieri](#)

**To:** Mailing LIST

**Sent:** Friday, January 29, 2010 4:12 PM

**Subject:** Replying to Peter Cariani and Stanley Salthe

Dear Peter,

Yes, you are right about Schrödinger. I should have written "...nobody predicted the genetic code, except Schrödinger...", but then I would have had to explain and that would have taken too long. Same thing about the issue of mechanism raised by Stanley.

I had already described my position on both issues in two previous papers, and I don't want to repeat it here. For those who are interested, at any rate, I am sending in attachment the two sections of those papers that deal with those issues (so you don't have to read the full papers).

Having done that, I hope that we move on and discuss the object of the present consultation.

Thank you.

Best

Marcello

58

----- Original Message -----

**From:** [Alexei Sharov](#)

**To:** Last Mailing LIST

**Sent:** Friday, January 29, 2010 3:56 PM

**Subject:** Re: Second reply to Alexei Sharov

Dear Marcello,

I am really glad that we agree on the metaphor that "nucleus is the brain of the cell".

Many people still don't understand it, and it looks like I misinterpreted your views.

Can you send some of your papers you mentioned?

"How many times have I said that there cannot be codes without a codemaker, and that the ribotype is the codemaker (the 'brain') of the cell?"

I still do not fully understand your term "codemaker" in relation to the cell. You wrote:

"We also know that proteins are made by a system of ribonucleoproteins that is the physical seat of the genetic code and that functions therefore as the codemaker of the cell (Barbieri 2003)."

Does it mean that codemaker = ribosomes + mRNA?

What about regulation of transcription, transcription factors, signal transduction pathways, chromatin modifications? Are they components of the "codemaker"?

Does the codemaker make proteins or change the code (the word "codemaker" is not clear)?

I want to apologize to Peter Cariani about "traditional cybernetics", I agree it was a strawman. Better to refer to it as a "mechanistic paradigm" rather than "cybernetics".

I indeed believe that we need a synthesis of biosemiotics and cybernetics, and that principles of biosemiotics should be extended to human-made devices. The term "agent" seems the best for such generalization, but it should not be limited to computer agents.

Also I fully agree with Peter on the importance of hybrid digital-analog systems.

I disagree with Stanley that Goedel's theorem rules out machines with complex autopoietic functions. I agree with you that "Machines, other than the very simplest, being logical, cannot be both complete and fully consistent." This may be a problem with one machine if it happens to break down. But a population of self-producing machines (with "life cycle") can go on even if some of them fail to unfold their program. The error rate sets the upper limit for possible complexity. But corrective functions (e.g., proofreading) can elevate this limit and open new levels of complexity.

-Alexei

59

----- Original Message -----

**From:** [Marcello Barbieri](#)

**To:** Mailing LIST

**Sent:** Friday, January 29, 2010 5:14 PM

**Subject:** Replying to Alexei Sharov

Dear Alexei,

(1) "I am really glad that we agree on the metaphor that "nucleus is the brain of the cell". Many people still don't understand it, and it looks like I misinterpreted your views. Can you send some of your papers you mentioned?"

I have only a few reprints of those papers and today they only have a historical value, but if you want I can bring them when we meet at some Gathering (are you coming to Braga?).

It's a long time that I have replaced the metaphor of the "brain of the cell" with the concept of "codemaker", but I am still fond of that metaphor because it is more intuitive.

(2) I still do not fully understand your term "codemaker" in relation to the cell. You wrote:

"We also know that proteins are made by a system of ribonucleoproteins that is the physical seat of the genetic code and that functions therefore as the codemaker of the cell (Barbieri 2003)."

Does it mean that codemaker = ribosomes + mRNA?

No, the ribonucleoprotein system includes ALL ribonucleoproteins, nuclear and cytoplasmic, so it is the seat of ALL ribo-codes. Not only the genetic code, but also the splicing codes, the microRNA codes, etc. I usually say that the ribotype is the seat of the genetic code, but that is just a shortcut, in order to simplify.

The metaphor of the 'brain' can help here. The intermediate brain is everything that connects the sensory apparatus (the incoming signals) with the motor-apparatus (the reactions of the organism), and it is the 'codemaker' of our brain, because it is the seat of all the codes that the brain uses to process the signals and produce the reactions. In the same way, the ribotype is everything that exists between genotype and phenotype, and is equivalent not to the whole brain but to the intermediate brain (the processing brain).

The truth, at any rate, is that we still know far too little. The RNA processing system of the cell has an extraordinary complexity, and the comparison with the brain is useful only to give us an intuitive idea of what it is like. But they do have something in common: they are both "codemakers".

The first and the last of the codemaker that appeared in the history of life. Keep in mind however that the codemaker of the eukaryotic cell has been evolving for almost four billion years. It is no longer the original codemaker that gave origin to the first cells.

All the best

Marcello

60

----- Original Message -----

**From:** [Peter Cariani](#)**To:** [Marcello Barbieri](#)**Cc:** Last Mailing LIST**Sent:** Friday, January 29, 2010 10:58 PM**Subject:** Comments on mechanism, nonreductionism, and Godel

Thanks for the nice piece on Schroedinger, and I think we are all in agreement regarding the cyberneticists. I knew we all knew better than that.

This issue of mechanism I think is really a contrast between reductive, eliminative mechanism and nonreductive approaches.

Reductionist biologists tend to believe that a mechanical description is ALL that needs to be said about organisms, and hence all they care about is the description of the parts and their interactions.

However, most of us believe that mechanical descriptions do not exhaust all there is to say about organisms. In particular, if you only focus on the parts, you can miss principles of biological organization (e.g. autopoiesis, semiotic processes) that explain how biological systems are organized such that they can persist and realize various functions.

So, although every biological system can be described mechanistically, (Pattee would say in terms of underlying dynamics), there are also functional, organizational descriptions that are complementary to mechanistic descriptions that provide useful insights (and are in fact indispensable if one wants to build artificial devices that realize similar functions).

So, it's not a matter of which kind of description is "correct" in any absolute sense, but which description is best depends on one's purposes. If you are a molecular biologist trying to characterize molecular parts & linkages so that new drugs can be developed to modify the behavior of the organism, then mechanistic descriptions are for you.

However, if you are theoretical biologist trying to understand general principles of biological organization and function, then you need to look at relations, not just parts (in the spirit of Rashevsky's relational biology, and various other proponents of complementarity -- Pattee, Polyani, Weiss, Waddington, Koestler). If you want to build artificial systems that have properties of living systems, then you damn well need an understanding of the general principles of biological design rather than just a parts list.

Re: Godel, Godel's impotency arguments really apply only to potentially-infinite symbol systems, and since these do not exist in nature and not realizable physically (all physical systems have finite limits in terms of string lengths or functional states), Godel's theorems have ABSOLUTELY NO relevance to real world formal/computational systems.

Computational complexity, on the other hand, has a great deal of relevance in terms of what operations are physically realizable within relevant material, energetic, and temporal limits. Some aspects of cells and nervous systems can in some instances be described by finite-state deterministic automata, but deterministic FSA's are not subject to Godelian indeterminacy (or Turing's Halting Problem) -- within a finite number of steps, they either come to a terminal state or repeat a previous total machine state (get into an endless loop). Their productions are surveyable and consistency can be tested within a finite number of steps. It's only when possible infinities are introduced, that the consistency of these systems becomes undecidable. In every area of mathematics, whenever potential infinities are introduced, rules have to be devised that demarcate operations that result in definite, consistent results from those that produce indefinite, potentially inconsistent outcomes. Although I'm not against infinity as an idea, because sometimes it can be a productive metaphor in mathematics, it's important not to confuse the idea with real world processes. There is too much casual mysterianism associated with

Godel -- the Godelian-based arguments never hold up to scrutiny, despite their facile, popular appeal. take care everyone,

Peter Cariani

## 61

----- Original Message -----

From: <[ssalthe@binghamton.edu](mailto:ssalthe@binghamton.edu)>

To: Last Mailing LIST.

Sent: Friday, January 29, 2010 11:10 PM

Subject: Re: About mechanism, again

Marcello --

This section of your Chapter 4 in 'Introduction to Biosemiotics' is a good clear laying out of your view of mechanismism versus organicism. Your distinction here is really between vitalism and mechanismism.

I have recently 'reduced' vitalism to historicity, in:

[2008.Vitalism versus physical-chemical explanations. In The Encyclopedia of Ecology S.E. Jorgensen and B.D. Fath eds.\) Amsterdam: Elsevier. Volume 5: 3694-3699. \(electronic copy available\)](#)

and so it is possible to see neoDarwinism as a kind of vitalism!

But this is not our question here. Mechanicism is.

I will assert that, (as you note) while a machine may not be a machine when reduced to its parts, I see that it is nevertheless mechanistic. The criterion for this is that its description is based in two-valued logic and mathematics, and is fully explicit or 'crisp'.

Your example of the machine that produces water from H and O, leading to the "emergence" of water within that logical framework points out that mechanismism usually relies, in modeling the world, implicitly upon material properties that are not explicitly part of the mechanistic diagram. Mechanicism is necessarily incomplete in this sense.

You might go on to say that there is now a completely mechanistic understanding of just how H and O interact to form water, but I retort that nothing of this leads us to expect the weird properties (qualia) of water. You might then point out that there is in fact a mechanistic understanding of this or that peculiar property of water, leading one to expect that ALL of these properties will eventually be 'understood'.

But we are not finished here, inasmuch these properties depend upon particular boundary conditions in each case, and so we need to know how these can occur in our world. E.g., the 'taste' of water depends upon the conditions in which it experienced (thirsty? wateboarding? drought/flood?).

By now we have a large, multiscale model of the situated machine that produces water from H and O, including the world it is located in and the microscopic properties of molecules and particles.

The point of all of this is that a mechanistic model of anything is actually restricted to a small region of this big picture, because it is aimed at pragmatic implications, and that all the rest is implicit -- but NOT as models -- rather, as material conditions mediating the operation of the local machine.

Mechanicism is incomplete and tied to particular pragmatic desiderata in each case (if this was explicit these models could indeed be considered semiotic models). Thus, code semiotics cannot build an intelligible picture of The World (even if can reduce intelligibility to neuronal patterns), but this certainly what Peircean semiotic aims to undertake.

STAN

## 62

----- Original Message -----

From: <[charbel@ufba.br](mailto:charbel@ufba.br)>

To: Mailing LIST

Sent: Saturday, January 30, 2010 3:58 AM

Subject: Re: On the premise of the consultation

Dear Marcello

A point worth discussing also appears in this sentence of yours: "[it is also perfectly legitimate to assume that entities like interpretation, intentionality and consciousness arose only in nervous systems, because they require internal representations of the world and two distinct types of meaning \(sense and reference\)](#)"

There are serious attempts, to me, convincing, that we can have cognition without internal representations...

Cheers

Charbel

63

----- Original Message -----

From: <[ssalthe@binghamton.edu](mailto:ssalthe@binghamton.edu)>

To: Last Mailing LIST Sent: Saturday, January 30, 2010 4:06 PM

Subject: Re: Comments on mechanism, nonreductionism, and Godel

Here I attempt to reply to Peter on Gödel.

Without gainsaying his points below, I would point out that my reference to this constraint on mechanicism is in connection -- not with necessarily finite particular problems or regions at particular scales -- but with the (probably usual) background notion that the world / universe can be susceptible in principle to logical description and mechanistic modelling.

All actual mechanical models or descriptions are finite, but 'The World' is not. This is because

(a) any parcel of the world ranges from (presumably) Planck scale to ...? we don't know where (multiple universes anyone?). This is relevant to any locale because we know that boundary conditions from larger scale levels impinge upon phenomena at any scale, by way of their having constrained the scale immediately bounding the phenomenon we observe. It's boundary conditions 'all the way up'. It may be that conditions devolving from the level just higher than the known universe would have little effect upon a given practical problem (but keep in mind the anthropic principle here), but it cannot be discounted philosophically.

(b) semiotically, perspectives that might be taken upon a phenomenon anywhere are uncountable. Therefore any implicitly global (philosophical) assessment will be tracking infinities.

(c) my point is relevant to the mechanistic ideology, which, to be consistent (as it must be!) would necessarily suppose that a complete global picture of the Whole is in principle possible -- in the long run. In the mechanistic philosophy, the global picture would have to be a kind of tinkertoy joining of knowledge from every known system to build up into the whole, which must also remain functional at any locale within it. As this model grew, it would acknowledge no boundary, and so brings Gödelian limitations closer and closer to its edge.

So, it is not in particular applications that mechanicism fails to be philosophically convincing for these reasons of indeterminacy, but in the imagined understanding of the 'whole thing'. Less fully explicit approaches (? qualia, etc.) do not have this limitation.

STAN

64

----- Original Message -----

From: [h h pattee](mailto:h h pattee)

To: Last Mailing LIST Sent: Saturday, January 30, 2010 9:53 PM

Subject: Re: Comments on mechanism, nonreductionism, and Godel

Hi Peter, Stan, *et al*,

I would say that Stan is presenting a metaphysical view of reality that need not meet an empirical test, while Peter is presenting a scientific view of reality which must meet an empirical test. With respect to the application of formal proofs to scientific reality, the evidence continues to support Einstein's view: "In so far as the propositions of mathematics are certain they do not apply to reality; and in so far as they apply to reality they are not certain."

Howard

65

----- Original Message -----

From: [GMail](mailto:GMail)To: [h h pattee](mailto:h h pattee) Cc: Last Mailing LIST Sent: Sunday, January 31, 2010 2:39 AM

Subject: Re[2]: Comments on mechanism, nonreductionism, and Godel

Dear Howard, Dear all,

I agree absolutely with Howard. Galileo discussed this problem more deep.

Sergey

66

----- Original Message -----

From: "Søren Brier" <[sb.ikk@cbs.dk](mailto:sb.ikk@cbs.dk)>

To: Mailing LIST

Sent: Saturday, January 30, 2010 11:21 PM

Subject: RE: About mechanism, again

Dear all

Let me point to an often overlooked but crucial aspect of life and living system from a scientific point of view and which distinguishes them from all other systems, namely that are capable of experience.

Let me also point out that neither on a mechanistic, a thermodynamic or a system-cybernetic basis - or a code-semiotic - do we seem even close to even start to explain why or be able to give a generative model of experiencing!

I still cannot imagine what a code is in a non-Peircean semiotic system and Marcello cannot answer my or other researchers questions within his frame of thinking and even ask me not to repeat them.

Here is my best description of what Marcello is doing.

Marcello's whole solution lies in that he uses the concept of code in a way that is independent of Firstness, Secondness and Thirdness combined in triadic semiosis and instead uses a metaphysics based on a blend of mechanistic, thermodynamic and a system-cybernetic informational models on a materialistic physicalistic basis, which he does not give a deeper definition of.

He is convinced that this and empirical testable hypothesis together defines "scientificity" and it is obvious and realistic. Thus he either cannot or is unwilling to engage in any philosophy of science analysis of his concepts. He seems to believe that they are real in the form of being veridically objective wordings of real phenomena. He seems also to consider the language based concepts he uses as being metaphysics free and not based on any other paradigm than being "scientific". Therefore he is not obliged to go into paradigmatic reflections in spite of that many of us thinks that he is forming a new paradigm called code-bio-semiotics. Because he is just describing the scientific truth as he repeats in various formulations. And he cannot understand that some of us cannot understand it. It must be because we have left the sure path of science to become devoted disciples of the prophet Peirce.

To make a semiotics was certainly a paradigm for both Saussure and Peirce and Marcello does not want to use any of these, being aware that they are paradigms with a metaphysics he does not ascribe to.

His argument being that they are not "scientific". "Science" considers itself since logical positivism to be metaphysical free. It deals directly with reality and therefore can avoid dealing with metaphysics.

It is simply not relevant for science. People who engage in metaphysics stops being scientific.

That at least was the way I was taught as a biologist and even within empirical psychology.

Science has to stay clear of meaning, because that is par excellence a non-scientific term as it includes subjective consciousness.

Correct me if I am wrong Marcello.

Venlig hilsen/best wishes

Søren Brier

67

----- Original Message -----

From: "Günther Witzany" <[witzany@sbq.at](mailto:witzany@sbq.at)>

To: Mailing LIST

Sent: Sunday, January 31, 2010 10:22 AM

Subject: Re: About mechanism, again

Dear all!

I welcome this analysis of Soeren although I do not share cyber-semiotic perspective.

But it is an important contribution to focus not solely at the conviction on which degree our sentences meet objective reality (metaphysics) but on how we justify the construction of our sentences within a goal-oriented scientific discourse community (pragmatics).

If we integrate philosophy of science discourse results we will be able to talk about the same understanding of what is science. In this respect the whole discussion is essential and all contributions are important building blocks.

May I add the consortial character of any natural language/ code community without which no single sign-using agents would be competent to combine (syntax) signs or sign-similar sequences in a real life context (pragmatics) to transport meaning (semantics).

Exactly this is missing in non-living nature. If we look at recent neurobiological results we clearly know that human brains are essentially not functioning without social interactions (with social communities), i.e. we share social brains (social organs) which depend on rich interactional input for function.

In this respect we should always keep in mind the intersubjective-communicative character of thought, experience and research.

Correctly I agree with those utterances that although machines may simulate natural languages, they are missing essential feature of how to generate meaningful (and correct) sentences de novo, because machines can generate algorithm based sequences in the realm of their construction principles. Never-spoken-before meaningful sentences (generative speech acts) for which no algorithm exists are not possible within artificial language machines. Therefore the mechanistic approach is able to explain new genetic sequences just as error rates, i.e. chance mutations within statistical drifts. The natural genome editing of competent viral agents such as RNA-, retro- or DNA viruses must be an obscure quasi-vitalistic perspective without future.

Best Wishes

Guenther

68

----- Original Message -----

From: <[ssalthe@binghamton.edu](mailto:ssalthe@binghamton.edu)>

To: "Günther Witzany" <[witzany@sbq.at](mailto:witzany@sbq.at)>; "Søren Brier" <[sb.ikk@cbs.dk](mailto:sb.ikk@cbs.dk)> Cc: Mailing LIST

Sent: Sunday, January 31, 2010 4:15 PM

Subject: Re: About mechanism, again

Günther -- Consider that the sentence-generating brain can be visualized as a changing landscape of neurons and glia, etc. Then (now doing pansemiotics) consider a landscape of trees and valleys, etc., and note that new configurations are emerging here all the time as well -- wind patterns, movements of animals -- such that every moment a new configuration is generated. How is this formally different the generation of new sentences among the neurons?

STAN

69

----- Original Message -----

From: "Günther Witzany" <[witzany@sbq.at](mailto:witzany@sbq.at)>

To: Mailing LIST

Sent: Monday, February 01, 2010 6:33 PM

Subject: Re: About mechanism, again

Stan!

I understand that ontological description seem to be attractive models for catching reality, but after linguistic turn and even more pragmatic turn this is not possible any more: The language game used to describe observation does not mirror the brain activity during the perception of reality.

This concept of Manfred Eigen failed as I outlined in my 1995 article in detail.

Yes, to follow 3 levels of semiotic rules in correct use of sign-sequences is coherent in with the ability to communicate, i.e. to interact mediated by signs. but this dramatically differs if water molecules frize to ice, which underlies natural laws in a strict sense, but no semiotic rules are present.

In this respect the metaphysical construction of pansemiotics is a abstractive fallacy under several others as outlined by Karl Otto Apel. The several levels of abstractive fallacies which did not integrate pragmatic turn results I outlined in my 2005 article in the attachment (chapter 7).

Best

Guenther

70

----- Original Message -----

From: "Peter Harries-Jones" <[peterhj@yorku.ca](mailto:peterhj@yorku.ca)>To: "Günther Witzany" <[witzany@sbg.at](mailto:witzany@sbg.at)>

Cc: Mailing LIST

Sent: Monday, February 01, 2010 7:09 PM

Subject: Re: About mechanism, again

DEAR GUNTHER AND ALL

May I support your comments, especially your emphasis on the "consortial character" of living forms in your e-mail, viz:

" the consortial character of any natural language/code community without which no single sign-using agents would be competent to combine (syntax) signs or sign-similar sequences in a real life context (pragmatics) to transport meaning (semantics). Exactly this is missing in non-living nature."

1. One of the major problems I have with Marcello's theses (which I have already communicated to him ) is that he begins his discussion of Biosemiotics (both its definition and its history) with empirical analysis of "the single cell." Now I know very little about biology, but I do know an \_ideal type\_ when I see one, and the "single cell" is an abstract concept which belongs to the scientific imagination of ideal types rather than in nature. After all both copying and coding lead to plurality 'on the very first day' of his discussion of the origin of living systems.
2. In any event, somewhere along Marcello's production line, the issues of continuation of "production" per se is going to become a lesser issue than the protection of the "production" process in itself - as in the case of when is a copy not a copy but a fake, or when is a copy not a copy but a pathogen. Umberto Eco argued that all appropriate definitions of semiotics should begin with a consideration of the phenomenon of fakes, for all questions of meaning must take distortion of meaning into account, otherwise there is no possible way of defining meaning in the first place.
3. So far as I know, no writer in the field of Biosemiotics has proposed that there is a Maxwell Demon at a code production centre of the genome sorting meaning from non-meaning - so we cannot indulge ourselves in same metaphysical games that the physicists love to play with the laws of thermodynamics. Witzany has proposed that meaning distinctions can only be drawn in a real life context through pragmatics. The point seems to me to be unassailable.
4. At what point does the pragmatics of the case lead to appropriate definitions of biosemiotics? Jesper Hoffmeyer has suggested, with the appearance of the interaction between "self" and "other." Empirically it would seem that this condition would have to occur in living systems where ever pathogens occur. As Yair Neuman has pointed out this proposition is the basis for Ira Cohen's approach to the human immune system and is recognized world wide as both a valid theoretical and empirical account of immune system activity.
5. Douglas Hofstadter (not a biosemiotician) discusses the origins of "self-othering" interaction through the appearance of 'strange loops' "where symbolic and physical levels feedback into each other and flip causality upside down, with symbols seeming to have free will and to have gained the paradoxical ability to push particles around, rather than the reverse." A strange loop is a good term, it seems to me, to point to entanglement in living systems and to answer the question that Rosen asked, namely "What is Life." In his latest book Hofstadter tries to demonstrate how the appearance of strange loops arose in the human brain according to principles of mechanism.
6. The most interesting feature of Hofstadter's discussion is the jump he takes from physical manifestation into a discussion of how strange loops automatically yield full blown human perception and symbolism. In other words, he recapitulates Frege's "theory of representation." And, of course, Frege's theory of representation is what Marcello insists upon when he discusses his two types of semiosis, coding semiosis and representational semiosis separated in evolutionary time.

His colleagues, Marcello tells us, are calling Biosemiotics crazy and mystical because we seem to be arguing that living cells have Frege's theories of representation embodied within them .

7. But that is not what the Hoffmeyer segment of Biosemiotics is arguing. It proposes that an appropriate definition of information can be drawn from Gregory Bateson's "the difference that makes a difference." This gives rise to rather limited reflexivity, but nevertheless sufficiently subjective for meaning to arise from a) self-and othering b) the tendency of all living organisms to form habits and c) the creation of a somatic ecology [i.e. A living body is a "swarm" with "swarm intelligence"- Thesis No. 7 of \_Reading Hoffmeyer, Rethinking Biology\_]

8. And, of course, such swarm intelligence would be pragmatic - which brings us back to Gunther Witzany and his concepts of the pragmatics of sign mediated interaction.

By the way Stan, I am interested to learn that abiotic manifestations are complex enough to develop "HABITS." How is this pansemiosis possible except in another ideal type manifestation called "complexity?."

Regards, Peter Harries-Jones.

71

----- Original Message -----

From: "Günther Witzany" <[witzany@sbg.at](mailto:witzany@sbg.at)>

To: "Peter Harries-Jones" <[peterhj@yorku.ca](mailto:peterhj@yorku.ca)>

Cc: Mailing LIST

Sent: Monday, February 01, 2010 7:44 PM

Subject: Re: About mechanism, again

Dear Peter and all!

As recent virus biology suggests the coding agents must be of viral descent because their coded sequences are not found in any cellular life and, additionally act as highly abundant swarms from the very beginning colonizing each other before cellular life evolved.

Interestingly all viruses mark their genomes for self non-self identification, an important feature which later one we can find in epigenetic markings which was transferred as viral competence as useful tool to cellular life. Self non-self identification is essential in all communication processes of all organismic kingdoms.

This includes group identity and communication processes within groups sharing same repertoire of vocabulary. How important this commonly shared competence for self non-self identification is we can see at the constantly changing environmental situation of human cavity. This ecological habitat assembles billions of bacteria of 500 different species, each of them communicate via quorum sensing and several kinds of biofilm organisation. And - additionally - must differentiate between self(signs) non-self (signs) and "noise" (no biological sign). Of special interest indeed is the viral consortial basis of the adaptive immune system. Let me add 3 articles:

Best Wishes

Guenter

## 72

----- Original Message -----

**From:** [h h pattee](#)

**To:** [Peter Harries-Jones](#) ; [Günther Witzany](#)

**Cc:** Mailing LIST

**Sent:** Monday, February 01, 2010 11:26 PM

**Subject:** Re: About mechanism, again

I think we have a Two Cultures problem here.

Harries-Jones says: "the "single cell" is an abstract concept which belongs to the scientific imagination of ideal types rather than in nature."

HP: To a biologist, the single cell, being part of an ecosystem or organism, does not make it abstract any more than to a physicist a single planet, being part of a universe or solar system, does not make it abstract.

Harries-Jones: "Umberto Eco argued that all appropriate definitions of semiotics should begin with a consideration of the phenomenon of fakes, for all questions of meaning must take distortion of meaning into account, otherwise there is no possible way of defining meaning in the first place."

HP: I agree with Umberto. This is also a necessary property of genetic sequences they may be functional or they may be noise (a distortion of function). Function is first meaningful at this primal level by its contribution to survival.

Harries-Jones: "So far as I know, no writer in the field of Biosemiotics has proposed that there is a Maxwell Demon at a code production centre of the genome sorting meaning from non-meaning - so we cannot indulge ourselves in same metaphysical games that the physicists love to play with the laws of thermodynamics."

HP: On the contrary, the study of the physical requirements for a Maxwell Demon is not a metaphysical game. Reality plays a central stake in this game, and playing it requires a profound knowledge of physics. However, the function of the Demon, which is to select or classify molecules, is realized in the gene's molecules by the process of natural selection  
Howard Pattee

## 73

----- Original Message -----

**From:** "Koichiro Matsuno" <[CXQ02365@nifty.com](mailto:CXQ02365@nifty.com)>

**To:** Mailing LIST

**Sent:** Tuesday, February 02, 2010 2:33 AM

**Subject:** RE: About mechanism, again

Stan wrote: "Any flows of air, water, energy in any form, will be somewhat habitual, entrained according to average conditions. They will shape the substrate they pass over, and these shapes will in turn serve to habituate the flows further. This kind of example would, I am pretty sure, work to entrain neurons as well (e.g., Hebb's rule)."

Yes, there is a factual evidence. Suppose you stimulate hippocampus neurons of a rat (e.g., by a weak laser) for LTP (long-term potentiation) and ask the question of how a LTP propagates between pre-synaptic and post-synaptic neurons as processing the flow of neurotransmitter glutamate in between. There are at least three possibilities; (1) LTP mainly for post-synaptic, (2) for pre-synaptic and (3) for both simultaneously. The experiments (Enoki et al, Neuron 62,242-253, 2009) reveal that the LTP propagation is mainly toward the pre-synaptic. Simply put, changes in the flow of neurotransmitters propagate toward the upstream rather than the downstream. The result looks counter-intuitive, but factual.

Koichiro Matsuno

74

----- Original Message -----

From: "Stephen Pain" <[st3pen@yahoo.com](mailto:st3pen@yahoo.com)>To: "Marcello Ba" <[brr@unife.it](mailto:brr@unife.it)>

Sent: Tuesday, February 02, 2010 1:32 PM

Subject: Chomsky

Dear Marcello,

I think that one can like Jerry Foder and Noam Chomsky talk about modules or faculties, however there is no empirical evidence for their existence - so perhaps they are emergent states within a neurobiological substrate - or just models that are useful in organising and describing human language and communication.

The actual processes are very messy and complex. Of course I do want to throw out Chomsky with the bath water. However I not in favour of subscribing to deterministic models - I would rather have them as working ones - that goes for Sebeok et al. If you were to ask me whether those models have full explanatory force - I would say absolutely not - they work within the parameters of a hypothesis - and in that they are useful as they do follow certain rules. As for interpretation - it requires at the least a nervous system or nerve net.

Again that does not mean we have to get rid of earlier or proto-interpretation - as it must have origins.

Does that make sense- written rather quickly. Yours,

Stephen

75

----- Original Message -----

From: [Marcello Barbieri](#)

To: MAILING LIST

Sent: Thursday, February 04, 2010 9:24 AM

Subject: Revised paper and final check

Dear Colleagues,

Your comments have made me revise the paper and now I am sending in attachment the last version for a very final check. There are three main novelties in it.

(1) The Title has been changed in order to underline that the primary goal of the paper is a new model on the origin of language (the synthesis of Biolinguistics and Biosemiotics is in fact a consequence of that model).

(2) The text has been modified in many points in order to take into account most of the suggestions that I have received from you.

(3) The Conclusion has been entirely rewritten and an Acknowledgements section has been added.

I am circulating this paper again because the proposal of a synthesis between Biolinguistics and Biosemiotics concerns the whole biosemiotic community. If you have anything else to say, therefore, please say it now because this is my last round of consultation on this issue. Thank you all and best regards to everyone.

Marcello

76

----- Original Message -----

From: [Morten Tønnessen](#)To: [Marcello Barbieri](#)

Sent: Thursday, February 04, 2010 3:10 PM

Subject: Re: Revised paper and final check

Dear Marcello,

I have followed this discussion throughout, and realized how frustrating it must have been for you to see how few actually addressed the (new) substance of your article. That was a shame. Hopefully the ideas concerning the origin of language herein will be analysed in much more detail (from both sides of the fence) after your article has been published. Best,

Morten

77

----- Original Message -----

From: "Peter Harries-Jones" <[peterhj@yorku.ca](mailto:peterhj@yorku.ca)>  
 To: "Marcello Barbieri" <[brr@unife.it](mailto:brr@unife.it)> Cc: MAILING LIST  
 Sent: Friday, February 05, 2010 1:06 AM  
 Subject: Re: Revised paper and final check

Dear Marcello, You come to the conclusion that:

"[Biolinguistics and Biosemiotics have been developed without the idea that life is based on organic codes, and that is probably why they have never be able to provide a realistic model for the origin of language.](#)"

With regard to "realistic models"

(1) I do not see how the particular expression of organic coding at the origin of life could enter into the similarities or differences of a very modern dispute between Biosemiotics and Biolinguistics on languaging. The temporal differences between then and now are astonishingly great.

What the modern dispute is over is a definition of recursiveness that acknowledges origins of reflexiveness in evolutionary time. Witzany proposes that this evolutionary timing is associated with the onset of viruses, which is a long time ago in evolutionary terms but very much "nearer" to present events than the origin of life of which you keep on writing about - as if the description of your time period was the most important feature on which to found the discipline of Biosemiotics. I know you feel this to be the case but I do not see you addressing Witzany's issues at all. I would also argue:

(2) In the world of animal communication and "language" Biolinguistics argues that there is a) either no reflexive recursiveness or b) as in a recent article in *Nature* on sparrows, which pays homage to Chomsky's recursiveness (i.e. "Grammar") exists without "meaning." Biosemiotics finds this argument totally unacceptable because Biolinguistics' definition of recursion does not include either reflexivity or context of interpretation; if it did, it would give rise to a discussion about the nature of strange loops which are linked to self- and- othering throughout the natural world.

(3) Chomsky central focus is on the presence of a priori syntactical grammatical structures in the human brain instead of pragmatics, being primary in communication and language formation. Chomsky presupposes an organ-centric approach to the sudden appearance of language ability in the human species, but Hoffmeyer argues that this a "hopeful monster scenario" is never considered likely in evolutionary biology and is unacceptable.

Best regards,

Peter.

78

----- Original Message -----

From: [Marcello Barbieri](mailto:Marcello.Barbieri)  
 To: MAILING LIST  
 Sent: Friday, February 05, 2010 5:45 PM  
 Subject: Replying to Peter Harries-Jones

Dear Peter,

Let me repeat here what I wrote in my first collective letter (14 Jan):

"[The purpose of this consultation is to get a realistic picture of the feelings that exist today in Biosemiotics in respect to Biolinguistics, and I hope therefore that you will accept to comment on this point.](#)"

I think that this is an issue that interests the whole Biosemiotic community, and all I wanted to know is how many people are pro and how many are against a convergence with Biolinguistics (in a new theoretical framework, of course).

I am not trying to convince anyone of my views, as I know very well that that is a mission impossible.

I have proposed a new model on the origin of language and what do you ask me?

You ask me what I think of Witzany's views on viruses!

I have always appreciated your sense of humour, Peter, so I thank you for the joke, but I am sure you don't mind if I simply drop that point.

As for the other two points, they tell me that you are against the proposed synthesis, and that is all I wanted to know. Many thanks.

Marcello

79

----- Original Message -----

From: "Gérard Battail" <[gbattail@club-internet.fr](mailto:gbattail@club-internet.fr)>  
 To: "Marcello Barbieri" <[brr@unife.it](mailto:brr@unife.it)> Cc: MAILING LIST  
 Sent: Saturday, February 06, 2010 9:08 AM  
 Subject: Re: Apologies for a mistake

Dear Marcello,

Thank you for the revised version of your paper. Your correction concerning the relationship of syntax and meaning is welcome. I think that syntax is just a necessary means for conveying meaning. It has no meaning in itself but it is needed in order to express the relations between semantic entities. For instance, the sentence quoted in lines 104-105 of your paper is nonsensical just because syntax associates incompatible semantic entities: colourless and green, sleep and furiously, etc.

Once again, and more than ever, I feel how your concept of organic code is innovative and fruitful. Indeed, as soon as the genetic code was discovered, the oxymoron 'natural convention' became the expression of a reality. It was enough to radically question the traditional divide between nature and culture. Instead of stirring up a conceptual revolution, it received from mainstream biology the response 'business as usual'. Reflections about its own results should be a powerful means for science progress, yet short sightedness has been (and still is) the dominant attitude.

As an engineer, I am convinced that that Nature is an outstanding engineer that solved engineering problems some billion years prior to humans. I am thus not astonished that Nature invented the means of symbolic representation which are needed for communication, especially codes. I have shown by information-theoretic arguments that life can persist only thanks to error-correcting codes. The problem is that, for lack of the understanding brought by information theory, biologists do not perceive this necessity. The theorems of information theory are however as constraining as logical relations or physical laws.

The idea of cerebra bifida you outline in the conclusion is quite fascinating and hopefully worth further development.

Line 281, I found a (funny) typo: 'spicing' instead of 'splicing'.

Best regards,  
 Gerard

80

----- Original Message -----

From: "Peter Harries-Jones" <[peterhj@yorku.ca](mailto:peterhj@yorku.ca)>  
 To: MAILING LIST  
 Sent: Wednesday, February 17, 2010 7:54 PM  
 Subject: Re: Biosemiotics and Biolinguistics

I came across a passage in Yair Neuman's latest book that I think is very pertinent to what we have been talking about and is worth sharing. Here it is:

... Is Chomsky's theory of syntax a relevant analogy for biology?...Is there similarity between the grammar of human language, the rules of syntax and the "grammar" of genetics?...For good reason, the ideas of Chomsky seem to be of minor relevance for biologists. Let me support this statement. I searched the databases of several leading journals in Bioinformatics and examined the extent to which the name of Noam Chomsky, the world's most cited living intellectual, is mentioned in the journal's papers. I started with 'Bioinformatics', the leading journal in the field of bioinformatics. The name of Chomsky, and therefore reference to his work, was mentioned only in eight papers.

In 'Journal of Computational Biology' the name Chomsky was mentioned only in four papers that were published between 1999 and 2005. I was quite desperate and went to 'Nature Genetics' to see whether the name Chomsky has any relevance to those who are directly occupied with the sequencing and the study of the DNA. No results were found....I believe that the power of the linguistic metaphor for biology is in raising our awareness about the constraints imposed on tokens in a string of letters as a part of a meaning-making process. However focussing on the string level and excluding the rest is a wrong move...

*Yair Neuman. Reviving the Living: Meaning Making in Living Systems. Elsevier. 2008:154.*

Regards, Peter.

81

----- Original Message -----

**From:** [Marcello Barbieri](#)**To:** Mailing LIST**Sent:** Thursday, February 18, 2010 10:08 AM**Subject:** Re: Biosemiotics and Biolinguistics

Dear Peter,

I started this consultation (Jan 14) with the words : “Dear Colleagues, We have all been critical of Chomsky’s ideas, to a lesser or greater extent, but we cannot ignore them, ...”

I can only go back to that concept. There is no point whatsoever in repeating the old criticism, saying the same things all over again, keep snaring at a giant thinker just to feel ... what?

What is the purpose of all this being negative?

This consultation was NOT about the past, but about the future.

Biolinguistics is an emerging new discipline, like Biosemiotics, and what do I hear?... just drop it!

Is that the way that we want to deal with the problem of language?

At any rate, I am not giving up.

I believe that the language problem is first and foremost a problem of development (embryonic, foetal, infant and child), and I also believe that the key lies in the organic codes of development.

I am not interested in the old mantras against Chomsky.

What matters is “Is there anything in Chomsky’s views that can help us go forward?”

More in general “Is it worth getting in touch with the Biolinguistics people?”

Lets move forward, Peter. Let’s discuss new ideas, for God’s sake, not the same old stuff! Best  
Marcello

82

----- Original Message -----

**From:** "Peter Harries-Jones" <[peterhj@yorku.ca](mailto:peterhj@yorku.ca)>**To:** "Marcello Barbieri" <[brr@unife.it](mailto:brr@unife.it)> Cc: MAILING LIST**Sent:** Thursday, February 18, 2010 3:57 PM**Subject:** Re: Biosemiotics and Biolinguistics

Dear Marcello,

Re: the same old stuff:

Coding

Coding Plus Redundancy yields Context

Context plus Sign Mediated Interaction (pragmatics) yields Polycontextural configurations

Polycontextural configuration plus recursive-hierarchy yields organizations which can be compared in semiotic terms from immune systems to Volosinov and Bakhtin (the theme of Yair's book 2008)

The complement of recursive-hierarchal order = heterarchy -a topological form without any nodes thus without finite state transitions and therefore beyond conventional or even modal logic (the future)

To coin an expression based on language being used the Olympics: Coding alone fell down on the hill.

If Chomsky could tell me how to represent semiotic process through dialectical heterarchic toroids, however, I would be enchanted.

All the best, Peter.

## 83

----- Original Message -----

From: "William R. Buckley" <[wrb@wrbuckley.com](mailto:wrb@wrbuckley.com)>

To: "Peter Harries-Jones" <[peterhj@yorku.ca](mailto:peterhj@yorku.ca)>; "Marcello Barbieri" <[brr@unife.it](mailto:brr@unife.it)>

Cc: MAILING LIST

Sent: Thursday, February 18, 2010 6:31 PM

Subject: RE: Biosemiotics and Biolinguistics

All:

At this point, I find reason to chime in.

Now, perhaps I misunderstand the use of the term \*redundancy\* as employed by Peter.

In such case, Peter, please correct my misunderstanding.

Yet, I argue that redundancy is part of a code.

Redundancy does not constitute context.

wrb

## 84

----- Original Message -----

From: "Peter Harries-Jones" <[peterhj@yorku.ca](mailto:peterhj@yorku.ca)>

To: "William R. Buckley" <[wrb@wrbuckley.com](mailto:wrb@wrbuckley.com)> Cc: MAILING LIST

Sent: Friday, February 19, 2010 3:39 PM

Subject: RE: Biosemiotics and Biolinguistics

Dear William Buckley,

Yes, I should have said "code plus redundancy within a development hierarchy" yields context.

Development hierarchies are always nested and processual: see for example the difference between stem cells and fingerprints, first layering and last layering in which the specification of the last layering defines minute particulars, i.e. the detailed specification of complete information. Prior to this moment of last layering, development of organized unfolding requires context as it undergoes coding transformations of nested redundancies.

Hope this helps. By the way Stan Salthe sent me his wonderful piece on "hierarchy" in reply to my e-mail, which more than clarifies the above remarks.

All the best, Peter.

## 85

----- Original Message -----

From: "Søren Brier" <[sb.ikk@cbs.dk](mailto:sb.ikk@cbs.dk)>

To: "Peter Harries-Jones" <[peterhj@yorku.ca](mailto:peterhj@yorku.ca)>; "William R. Buckley" <[wrb@wrbuckley.com](mailto:wrb@wrbuckley.com)>

Cc: MAILING LIST

Sent: Friday, February 19, 2010 4:34 PM

Subject: RE: Biosemiotics and Biolinguistics

Dear Peter

I must confess that I find it difficult to understand. Maybe because the ontological framework is not explicated. Is it Marcello's "scientific" materialism based on some kind of objective informational idea of coding, is it a Batesonian cybernetics that does not in my opinion have a theory of first person consciousness but a cybernetic theory of mind or is it a Peircean phaneroscopic foundation with Firstness as pure feeling and where all coding is part of a semiotic process.

Venlig hilsen/best wishes

Søren Brier

86

----- Original Message -----

From: "Peter Harries-Jones" <[peterhj@yorku.ca](mailto:peterhj@yorku.ca)>  
 To: "Søren Brier" <[sb.ikk@cbs.dk](mailto:sb.ikk@cbs.dk)> Cc: Mailing List  
 Sent: Friday, February 19, 2010 6:16 PM  
 Subject: RE: Biosemiotics and Biolinguistics

Dear Soren,

a cybernetic theory of mind that arises out of interactive dialogue between organisms or persons must have some elements of subjectivity by definition, at least recognition of self and other; through it objective notions of coding become transformed into habits or rule; while the phaneroscopic aspects of 'feeling' or sensing are not pure potentiality since they are already ordered in circular causative manner.

I think Stan Salthe made this latter point in his review of your book in the journal *Biosemiotics* i.e. that firstness does not necessarily have to be taken in the way that Peirce stated. Firstness could be "goings on" in a circular manner - the spin of primordial change if you want to get romantic about it.

All the best, Peter.

87

----- Original Message -----

**From:** [Søren Brier](mailto:Søren Brier)  
**To Mailing Liist**  
**Sent:** Thursday, February 18, 2010 7:28 PM  
**Subject:** RE: Biosemiotics and Biolinguistics

Dear Marcello

I feel an urge to answer this question though I have been too busy otherwise to participate in this discussion. I think that many of us feel that your idea of a code-semiotics without interpretation would fit very nicely with the basic Chomsky generative grammar approach because it is subject to the same critique. It is a very formal approach whose concept of meaning is very far from what goes on in real embodied conscious interaction. I do not see a way from neither yours or Chomsky's theory to a theory of meaning and consciousness. In my view this and also the objective information approaches that can also support your framework are too limited to explain consciousness and meaning because their possibility of theoretical existence of mind, first person consciousness and meaning are simply abolished at the defining foundational ontology. To join with that sort of linguistic theory would just support the wrong part of your theory, namely the formal one that does not contribute very much to a theory of meaning.

I have looked at your well-organized and beautiful homepage of biosemiotics and experience that its purpose seems to be to define biosemiotics your way, as there is no presentation of these discussion we have on foundational matters.

Venlig hilsen/best wishes  
 Søren Brier

88

----- Original Message -----

From: <[ssalthe@binghamton.edu](mailto:ssalthe@binghamton.edu)>  
 To: "Søren Brier" <[sb.ikk@cbs.dk](mailto:sb.ikk@cbs.dk)> Cc: MAILING LIST  
 Sent: Thursday, February 18, 2010 9:24 PM  
 Subject: RE: Biosemiotics and Biolinguistics

Søren

I think you are correct in your view of Chomsky. Here is my view of how his work relates to aspects of linguistics (without taking sides on the details of either his or Saussure's theories):

{Chomsky theory {Saussure 'langue' {Saussure 'parole'}}}

That is, local meaning emerges from guidance by language structure, which is a more highly specified form emergent from the laws of Nature.

STAN

89

----- Original Message -----

**From:** [Marcello Barbieri](#)**To:** Mailing List**Sent:** Saturday, February 20, 2010 8:36 AM**Subject:** RE: Biosemiotics and Biolinguistics

Dear Søren,

As usual, you criticize not what I said but a distortion of it.

What I said is that the organic codes account for all semiotic processes inside the cell, and for many processes that take place in embryonic development and in the origin of language. I NEVER said that they account for everything, or that they explain consciousness. Actually I insisted many times that there are TWO distinct types of semiosis in life, that coding semiosis is different from interpretive semiosis, that the origin of mind (and then interpretation, consciousness etc) was a true macroevolutionary event.

Semiosis, in my view, is like an iceberg where coding semiosis is the submerged part and interpretive semiosis is the tip. Which means that coding semiosis accounts for roughly 85 % of all semiotic processes of life, and is the foundational rock that supports all higher types of semiosis. But you sit up there, on the top of the tip of the iceberg and say that that is everything, that consciousness exists because everything is consciousness-like, that first comes firstness, second secondness and third thirdness. Amen.

Same story with my Website.

You criticize it because “..there is no presentation of these discussion we have on foundational matters.”

But the place for discussions is a Blog, and in fact all our emails are safely stored in Claus Emmeche’s Blog. In short, you criticize my Website for not being a Blog, and I am sure that if I had set up a Blog you would have criticized for not being a Website.

I find all that very amusing, thank you.

Marcello

90

----- Original Message -----

**From:** [Günther Witzany](#)**To:** [Marcello Barbieri](#)**Cc:** Mailing List**Sent:** Saturday, February 20, 2010 9:24 AM**Subject:** Re: Biosemiotics and Biolinguistics

Dear all!

If we agree that no natural language speaks itself as no code codes itself we could look at agents (-in-populations, i.e. swarms, cultures) which speak or have coding competences. If we identify such agents one of the main characteristics is the capability for self non-self differentiation. this is a common feature of all viruses which mark their genomes to distinguish self and non-self competitors. This marking has transferred later to cellular life via persistent (non-lytic) infection events and opens great variety of different reading patterns of same genetically stored data sets through epigenetic imprinting, which is a rather great evolutionary step, because nearly identical genetic codings can transport different contents (1,5 % difference in coding sequences between humans and great apes). Higher order regulation through mobile genetic elements makes it possible. Higher order regulatory elements such as non-coding RNAs and all other remnants of early RNA-world still active in present RNA-world are competent to code, recode, arrange, rearrange, are editing agents. It is an old fashioned fairy tail that viruses escaped from cellular life because there are so many viral genetic elements which are not present in any cellular life. Figure 3 of an interesting Eugene Koonin article demonstrates this rather clear:

Best

Guenther

91

----- Original Message -----

**From:** [Prisca Augustyn](#)**To:** Mailing List**Sent:** Friday, February 19, 2010 10:13 PM**Subject:** RE: Biosemiotics and Biolinguistics

I am quoting W. Tecumseh Fitch's (2009) Prolegomena to a Future Science of Biolinguistics. *Biolinguistics* 3.4. for what it's worth:

**The 'core explanandum' of biolinguistics:**

The central research topic in biolinguistics is a characterization and explanation of the human capacity to acquire and use language.

**Impediments to the success of biolinguistics:**

*The chance that the key ideas of any professional scholar's work are pure nonsense is small; much greater the chance that a devastating refutation is based on a superficial reading or even a distorted one, subconsciously twisted by a desire to refute.* (Langer 1962: ix)

[...]

This syndrome is particularly true of criticisms of Noam Chomsky, whose ideas so many scholars apparently love to hate. In my opinion, once placed in context and properly understood, most of Chomsky's scattered statements about both language evolution and its biological bases either are rather uncontroversial statements that any modern biologist studying, say, limb development would accept as a matter of course (e.g., that there must be various biological constraints upon the development of the language system), or statements of unpopular alternative hypotheses that deserve more careful consideration (e.g., language as a tool for thought rather than communication).

Outside of his technical linguistics work, Chomsky's main contribution to biolinguistics is his long championing a scientific approach to language as a *biological* phenomenon (Chomsky 2005).

One will search in vain in Chomsky's own writings for the naive conceptions of Universal Grammar for which he is so often mistakenly pilloried — one reason his critics typically quote his few scattered statements out of context, if they quote them at all.

My purpose in this article is neither to champion nor to attack Chomsky's conception of language (for this, see, e.g., Jenkins 2000, Lieberman 2000, Jackendoff 2002, Boeckx 2010) — but rather to argue that such discussions too often miss or leave unmentioned deeper commonalities of viewpoint and approach shared by most contemporary theorists interested in the biology of language.

Chomsky's 'language as a tool of thought' is parallel to Sebeok's 'language as a secondary modeling system'. They both agree that language is an exaptation; and there are many more such 'commonalities of viewpoint' ...biolinguists are looking for interdisciplinary "bridging theories" while trying to find their research questions and frame them as testable hypotheses. If not for anything else, it should be interesting to see how they are succeeding in developing their 'scientific field'.

Regards,

Prisca

92

----- Original Message -----

**From:** [Peter Cariani](#)**To:** [Prisca Augustyn](#)**Cc:** Mailing List**Sent:** Saturday, February 20, 2010 8:44 AM**Subject:** Re: Biosemiotics and Biolinguistics**Dear all,**

I teach psychology of music and one of the core questions in that field involves why we humans (and a few other animals) make and appreciate music (i.e. manipulate sounds for pleasure or interest). There is a great deal of carryover from cognitive science and linguistics that is not necessarily well founded (e.g. specialized modules for music that are the product of recent evolutionary selection mechanisms).

Evolutionary psychology abounds with what SJ Gould called adaptationist "just-so stories", and a common unsupported assumption that excites the biologists these days is that there is a genetic basis for every cognitive faculty (e.g. a music appreciation faculty).

There is also a natural tendency for many people to think a priori that music is restricted to humans and that our ability to recognize musical structure is parasitic on linguistic cognitive mechanisms.

I know Tecumseh from psychology of music, where he has written very lucid articles on the origins of music (he's a great guy, and one of the most creative and flexible thinkers in this arena).

Counterposed to the ideas above is the notion that language and music use domain-general cognitive processes that are self-organized and recruited for different ends depending on the nature of the inputs and the goal/reward systems that are involved (the purposes to which listening to music are put).

Some of these processes involve the ability to form neural assemblies that support categorical thinking (discrete symbols), general mechanisms for recognizing correlational patterns and invariances, and ability to recognize and produce sequences. Many animals are capable of categorical thinking and sequencing of actions in communications (I think immediately of other primates, whales and dolphins, elephants, and parrots) but a great many more animals are able to chain together elaborate sequences of discrete actions.

One can think in terms of evolutionarily-ancient cognitive operations that are needed for motile animals to recognize objects in their environs (despite changing appearances and conditions) and to navigate in changing sensory environs. The required information processing operations are, arguably, the building blocks of cognition, such that the general faculties on which language and music perception and cognition draw are much more ancient than some special purpose adaptations that came along in the last 2 million years (like the recent changes in our vocal tracts that allow us much more flexibility in sound production). So, basic neurocomputational representations and operations for sensorimotor coordination come first, then systems of more elaborate organization of perception and action, then languages of thought and communicative systems.

The concept of "exaptation" or function change seems a bit misleading here because exaptation leads one to think of separate and distinct functions that are subserved by evolving structures (e.g. feathers originally evolved for insulation that are co-opted for display and then flight, fr. Wiki-exaptation) whereas in this case, one has evolution of nervous systems of increasing power and adaptability that allow them to be utilized for many different potential functions. We normally don't think of memory for a particular class of patterns (say musical melodies) as being an exaptation of memory for other perhaps more evolutionarily primitive classes (say foods or odors) because we think that there is no particular gene or set of genes that is specific to remembering melodies per se that evolved for that reason -- there is no particular genetically-guided structure change associated with the particular functions -- we think there is a general purpose system for storing information, such that what kinds of information are stored are not necessarily genetically determined.

It would be akin to thinking that the evolution of more adaptable immune systems that can handle a larger repertoire of antigens is an exaptation -- but this really isn't an exaptation per se because the function hasn't shifted to a new one. Rather, the same function has been generalized.

Domain-general, general purpose systems are less well appreciated than the simple idea of special purpose "hacks" that evolved for this or that reason, and that might involve a small number of genetic modifications. In addition, there has been a tendency to think (really contrary to the neural evidence) that "speech is special", that there are genetically-determined specialized auditory computational modules for dealing with speech, rather than a general purpose system that gets recruited to make phonetic categorizations via learning processes.

Another problem is that the culture of molecular biology has equated "biological explanation" with reduction to molecular mechanisms and ultimately to genetics. As a physiologist, I get especially irritated when people assume that the ultimate "modern" biological explanation MUST be genetic.

There are plenty of other kinds of explanations based on the functional organization of biological systems (how systems are organized to realize functions) rather than parts and their local linkages.

These come under the general rubric of "physiology" and in the psychological sciences, these involve concepts of neural information representation and processing that really do not depend AT ALL on genetics per se.

Chomsky really never had a theory of either neurolinguistics, psycholinguistics, language acquisition or evolution. It is the form, not the material grounding of language that his theories address.

His theories are all platonic in the sense that they define language in terms of ideal forms (grammatical constructions) rather than grounding it in communicative or cognitive functions and/or neural mechanisms.

Yes, some of Chomsky's ideas are distorted by both critics and true believing followers, but the hard core of the theory itself has many deep, deep problems that are inherent to it.

I think what we need is a theory of neurosemiotics -- neural coding, how signs are embedded in patterns of neuronal activity, such that syntactic, semantic, and pragmatic relations can be implemented in nervous systems (I am working on a paper.....).

I have not been following this biolinguistics thread very closely (I hope this screed is not too tangential to the discussion.....) but I think biosemiotics has the potential advantage over biolinguistics of not having all the Chomskian ontological and methodological baggage that stems from his Platonism (which is really incompatible with any real biology that goes beyond simplistic genetic determinism).

Rather than trying to undo all the fundamental erroneous assumptions of Chomskian linguistics and its transplantation into biology (this is a hopeless cause -- there are too many embedded and mutually reinforcing bad assumptions), perhaps it is better for us to develop our own theoretical frameworks for semiosis in organisms, nervous systems, and communicative systems as clearly and coherently as we can.

Tecumseh is working on attempting to understand what general operations are needed for language -- this is a really admirable approach, but I think the Chomskian, Shannonian, and logical semantic frameworks cause more confusion than good -- we should not genuflect before theoretical edifices that have made a train wreck out of language and its philosophy. I do think biosemiotics could potentially give him a theory of meaning and its acquisition that would be better than the ones he is presently considering.

--Peter Cariani

93

----- Original Message -----

**From:** [Jesper Hoffmeyer](#)

**To:** [Peter Cariani](#) **Cc:** Mailing List

**Sent:** Sunday, February 21, 2010 5:02 PM

**Subject:** Re: Biosemiotics and Biolinguistics

Peter, thanks for this thorough and balanced posting.

As I see it you hit the core of the matter.

Jesper

94

----- Original Message -----

From: <[ssalthe@binghamton.edu](mailto:ssalthe@binghamton.edu)>

To: Mailing List

Sent: Saturday, February 20, 2010 3:50 PM

Subject: RE: Biosemiotics and Biolinguistics

Agreeing with Marcello that there are "two distinct types semiosis in life", this exchange with Søren points in the direction of pansemiotics. That is, on the Peircean perspective, physiosemiosis will have characterized abiotic dissipative structures before the origin of life, at macro- and mesoscopic scales.

After the microscopic origin of the genetic system, it invaded some of these dissipative structures allowing them to get complicated and complex. This resulted in simple physiosemioses becoming more elaborate, resulting in the 'intensification' of primal Firstness into what we call consciousness, at the mesoscopic scale. Thus, our own personal experience of semiosis derives from primal physiosemiosis, NOT directly from genetic codal semiosis.

STAN

95

----- Original Message -----

From: [Marcello Barbieri](#)

To: Mailing List

Sent: Sunday, February 21, 2010 10:11 AM

Subject: Re: Biosemiotics and Biolinguistics

Dear Stanley,

I am sorry, but the existence of two types of semiosis does NOT point in the direction of pansemiotics, as you say (or physiosemiotics, for that matter). On the contrary, it underlines that every type of semiosis had a beginning, as everything in life, and was the result of a true macro-evolution, an event that brought into existence something that did not exist before. And the only thing that can create absolute novelties is precisely a new code, i.e., a new relationship between existing entities that is NOT dictated by physical necessity. The origin of semiosis was the origin of genes and proteins, the first molecules that were manufactured by molecular machines on the basis of sequences, and sequences are signs because they are copymaker-dependent and codemaker-dependent entities. All molecules that came before genes and proteins were formed spontaneously and did not need signs, so they were not the product of semiosis. And there was no semiosis in the formation of planets, stars and galaxies. There is no semiosis in the Periodic Table, in quarks, in elementary particles, etc. etc. We have gone through all that before, remember the parable of grey and coloured molecules? Best

Marcello

96

----- Original Message -----

From: "Stephen Pain" <[st3pen@yahoo.com](mailto:st3pen@yahoo.com)>To: "Marcello Ba" <[brr@unife.it](mailto:brr@unife.it)>

Sent: Sunday, February 21, 2010 3:06 PM

Subject: Biosemiotics and Biolinguistics

Dear Marcello,

I think we can all accept that at different levels of evolution and development one requires different methodologies - and that an explanation for one need not and perhaps cannot explain what happens at another level or stage. Moreover, since much of what is carried out in biosemiotics is theoretical - we can afford to be open to other approaches. My only caveat is that we do not go for a Lysenko approach. Chomsky and Peirce are not Marx. We can disagree with them - and challenge them. This does not mean we are not accepting an alliance of approaches - it is the biosemiotic way - to be open to other approaches and dispute in the theoretical sandbox.

Stephen

97

----- Original Message -----

From: <[ssalthe@binghamton.edu](mailto:ssalthe@binghamton.edu)>To: "Marcello Barbieri" <[brr@unife.it](mailto:brr@unife.it)> and MAILING LISTCc: <[jaylemke@umich.edu](mailto:jaylemke@umich.edu)>; <[sji@rci.rutgers.edu](mailto:sji@rci.rutgers.edu)>; <[drdrpaul@gmal.com](mailto:drdrpaul@gmal.com)>

Sent: Sunday, February 21, 2010 4:43 PM

Subject: Re: Two kinds of semiosis

Marcello –

Thank you for providing an opportunity to expand upon my viewpoint on the ‘two types of semiosis’.

First, I don’t disagree that the origin of the genetic system – in fact, the origin of life – embodied the origin of codal semiotics. This origin is steeped in mystery (which most biologists play down, fearful of ‘intelligent design’ cooption). Given our physical statistical mechanics perspective, this origin of coding is such an enormity partly because the importance of context (boundary conditions) is not given full play.

Contexts in general select from possible configurations/conformations (as in the natural selection model).

Nothing happens ‘anywhere’; everything happens some-particular-where.

This is the basis of hierarchy theory, where not only bottom-up ventures are important, but also where top-down restrictive and enabling constraints do the selecting.

Now, such top-down, meso-and macroscopic bearings had logically to have been present prior to the origin of the genetic code. They play everywhere in the universe. They can be quite unusual in the statistical mechanical sense, and might even be quite complex. Since environmental boundary conditions are the result of history, each actual one is also totally unique, even if having aspects in common with others. The origin of codal semiotics was likely a one-off event, or a series of them, therefore a creative event as well.

Now, boundary conditions bearing upon chemical activities include also dissipative structures, which are always necessary to bring energy flows into play.

Dissipative structures exist partout in the universe at all scales. We must note that one or more must have been involved in the origin of the code (and the genetic system), possibly both simultaneously and sequentially. The world prior to the origin of life is a realm of wildly spinning and swerving dissipative structures in air and in water and in the molten core of the earth.

It is such organized energy flows that would have been the site of physiosemoses (in which I realize that you don’t believe because no codes seem to be involved). They also transcend statistical mechanics.

But for those of us interested in the ORIGIN of life, these forms are of focal interest.

Some of us, I think (e.g., Jesper), do allow that these were involved in ‘protosemioses’, even if not in ‘echt’ semiosis. (Physiosemosis is a vague enough concept to be taken either as ‘proto-’ or ‘physio-’, or, indeed, both.)

Now, back to the hierarchy theory. The ‘phenomenal experience of being’ (as urged by Søren) is, I will assert, a ‘meso’ phenomenon. **IT CANNOT BE A CHEMICAL PHENOMENON AS SUCH!** (even if it requires chemical and energy flows to be realized)

Given this, we can suppose that the original codal elements (however they managed to appear!) first gathered around them a chemical collection we can all a ‘protocol’.

These also **DID NOT HAVE CONSCIOUSNESS**. With time many of these were gathered by downward causal selections into multicellular groupings still found among prokaryotes.

Gradually, larger multicellulars evolved, and my perspective is that eventually, in animals, these **ACCESSED** the already present ‘consciousness’ vaguely ‘afloat’ among mesoscopic dissipative structures.

So, yes, My pansemiotic perspective is also (as John Deely asserts) panpsychic, in the sense just presented.

That is, all properties of living meso- to macroscopic forms, had to have been vaguely present, episodically accessed by abiotic dissipative structures prior to the origin of life -- and **STILL** inhabiting them today.

The takeover/manufacture of living dissipative structures under the guidance of genetic information allowed stable forms to evolve that were able to reliably experience this aspect of the universe in a locally focused manner.

So, yes – two kinds of semiosis, one codal and microscopic, the other dynamic and meso- to macroscopic.

The former, but not necessarily the latter, will be able to be modeled mechanistically. Note that this view does not play down the importance of codal semiosis, but puts it into a physical framework that gives the picture a certain overall verisimilitudinousness.

Stan Salthe

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----- Original Message -----

From: "Søren Brier" <[sb.ikk@cbs.dk](mailto:sb.ikk@cbs.dk)>

To: MAILING LIST

Sent: Monday, February 22, 2010 12:43 AM

Subject: RE: Biosemiotics and Biolinguistics

Dear Marcello (Stan, Cariani and Jesper)

I think the combined mails from Stan and Cariani (sorry but we have at least two Peters) explains very well the problems I point to in your approach (not indicating that you are alone with this problem or others have a clear solution). I agree with the direction of their hypothesis combined. Both Stan and Cariani give suggestion of the directions in which to form new research programs finding a solution, which I think should be the core of the biosemiotic paradigm. It is new territory, but Jesper's theory of semiotic freedom is a good step in the direction of reinterpreting evolution in a semiotic framework.

The problem of the evolutionary origin of mind and what kind of ontology necessary to make explanations possible is not solved, neither is what it is that makes living systems have the ability to experience anything at all and finally what causal role experiences and interpretation have in life.

As long as your code semiotics build on the top of traditional science and you are claiming a semiotics on another foundation than Peirce's and expect to explain mind an genuine Peircean triadic semiosis from that as a further development in evolution I will remain very skeptical. Also if you maintain the very strong focus on the genetic component alone. I am aware that these are what is accepted as "science" these days and that the implicit material ontological reductionism in this view is taken so much for granted that attaching that is considered to attach science as such. But that stems in my view from an unsophisticated philosophy science view that has not followed the knowledge developing within this area over the last 30 years.

I think that both Stan and I have attempted to formulate new frameworks of scientific explanations that shows the limits of the material as well as the informational reductionist ideals to some new one that may have to acknowledge vagueness, as Peirce pointed out, when we get to origins.

Venlig hilsen/best wishes

Søren Brier

99

----- Original Message -----

From: "Søren Brier" <[sb.ikk@cbs.dk](mailto:sb.ikk@cbs.dk)>

To: MAILING LIST

Sent: Monday, February 22, 2010 1:12 AM

Subject: RE: Biosemiotics and Biolinguistics

Dear Marcello

I have answered the discussion on paradigms in another mail. My point about your home page is that it presents your paradigm as biosemiotics as such. I am happy about that you refer to our homepages, but you do not refer to our views or our attempts to make a common minimal foundational description of the research program. I do not feel at home in the way your present biosemiotics, but I acknowledge your right to present such a view as one of the possible ones, but as I wrote in my paper in Signs that I presented a Peircean biosemiotics then you should underline that you present a code semiotic view of biosemiotics. I have tried to flesh out what our differences are in several mails.

I also support your work towards making a minimal foundation for all the paradigms of biosemiotics. But though you have used much of the critiques of the members here in your attempts to describe that foundation, I do not feel that your articles represents such an foundation that we can all agree on.

Maybe that is what you think is the result because you have taken into consideration much constructive critique, but at least I do not feel that we have made a consensus yet. Thus we need a further process here - if others agree with me - and some sort of formal process of agreement on such a minimal description.

Venlig hilsen/best wishes

Søren Brier

100

----- Original Message -----

From: "Jay Lemke" <[jaylemke@umich.edu](mailto:jaylemke@umich.edu)>To: <[ssalthe@binghamton.edu](mailto:ssalthe@binghamton.edu)[ussalthe@binghamton.edu](mailto:ussalthe@binghamton.edu)>Cc: "Marcello Barbieri" <[brr@unife.it](mailto:brr@unife.it)>; and Mailing List

Sent: Monday, February 22, 2010 2:59 AM

Subject: Re: Two kinds of semiosis

Stan and friends,

Very interesting discussion. I'd like to hear more about how the meso/macro semiosis differs from the micro one. I do think that not all semiosis has to involve a "code" as I understand the meaning of code. Because for me (and I think many others in linguistic traditions regarding semiosis) a code is not just a single signifier/signified/interpreter relationship, but a system of multiple, logically interrelated and interdependent ones.

I would agree with Marcello that semiosis requires a functional relationship (i.e. a recurring response by the interpreting system to the signifier-signal) that goes beyond what physical necessity (material causality) requires, so that the signifier-signal is responded to as-if it were whatever is the not-self side for the interpreting system of the functional process-unit. (I apologize that I am not a representationalist, so terminology can get a bit more convoluted. Just imagine that what the interpreting system (IS) takes to be the not-self "signified", the whatever-out-there for which the signifier-signal has come to stand, for the IS, is a sort of inference by the IS from the material reality of the IS's interaction with not just the signifier-signal, but some larger "out-there" and including its own adaptive response repertoire -- all of which together form the functional unit. This is a variant of Campbell-Bickhard interactionism.)

The additional condition here is that semiosis always occurs across scales, particularly timescales, but usually also spatial-extensional scales. The true micro level is the one on which the signifier-signal has its purely material-causal interaction with (some subsystem of) the IS. The functional response that goes beyond this occurs in a much (at least 1-2 orders of magnitude) larger-slower system that is in effect "interpreting" the micro interaction in relation to "context" (i.e. other events and structures over a bigger portion of space and time, including itself), to "functionality" (i.e. the IS is doing something potentially consequential at an even larger scale in space-time), and to its own "behavioral space" (i.e. what it can do, on its own inherent timescale and through its own structure). Just how one analyzes this further may depend on the particular case, whether you can manage with only 2 scales or you need 3 (usually, maybe always), whether the functional unit is the largest scale (I think), and whether the "meaning" or "meaningful" (for biological systems "adaptive" or not) response is something emergent at an intermediate scale between that of the IS and that of the signifier-signal. You might wind up even needing 4 scales, and that might be relevant to the question of why semiosis seems to appear only once we get macromolecules in structured environments.

So I agree with Stan that the top-down constraints of larger scales are necessary for semiosis. You've got to have some stability across time at a higher scale (e.g. from persistent material structure in the environment) in order for there to be something within which an IS response can be said to be functional, some world if you like where the "signified" can have a durable (even if briefly durable) meaning in relation to the functionality of the IS response. There is no point in interpreting x as a sign of A if the scale at which A matters is so chaotic that it can't in fact matter for the IS. (I suppose the limit of this is when we contract the scale of the "environment" down to that of the IS itself, so that meaning and function are internal and self-relevant but no more. But this seems to me in practice a degenerate case, not the genesis case. Semiosis does not, I think, arise solipsistically, but extero-functionally.)

In any case, it seems clear that you can have and probably did originally have semiosis without a code.

Unless you want to include in the idea of code a code that consists of only one Peircean triad. What makes codes powerful, certainly in the RNA-DNA case or its precursors, is that when x means A, it also means not-B. And not-C, etc. I think the real mystery is how this kind of code-as-system "evolved". My guess, and I think this may be similar to Jesper's view, is that it happens through functional interdependencies and correlations among prior, isolated semiotic triads. And again, those correlations arise because they can be meaningful at a larger scale, where their functional consequences can become interdependent. Cross scale again. (Note that the durable-enough higher-scale environment condition -- i.e. viable top-down constraints - - also gives the basis for the logical interdependence between "life as semiotic" and "life as stabilizer of its

own environments".)

Now all of this is still a mechanically modelable semogenesis. It's not really what I think Stan means in terms of the vaguer, inherited from above in the specification hierarchy, pan-semiotic participation kind of semiosis. I think what this means is that there are always already (at least for biological systems) some sort of physio-semiotic analogue processes, insofar as the same sorts of formally similar relationships across scale can hold, and likely do hold, for abiotic systems. Do abiotic dissipative structures (DSs) "do semiosis" in the formal sense defined above? and taking into account that there would have to be sufficiently persistent nested hierarchies of such DSs, or their environments, for there to be durable constraints? Stan has offered the example in other contexts of the dust-devil in a persistent (and slowly dust-devil-modifiable) landscape. Are there enough scales there for semiosis? Or maybe the vagueness comes because, given the less durable and more chaotic nature of what's happening across all the scales, there is only a more "abstract" (i.e. formally vague) set of relationships. Vague interpretation. Vague function. Vaguely defined "environment".

Philosophically, I think I would prefer a perspective in which bio-semiosis or codal semiosis emerges by specification within a prior framework of abiotic quasi or vague-ish semiosis-like processes-in-systems relationships vs. one in which the whole thing just pops up de novo when a certain threshold of complexity is reached. I take it the latter is more Marcello's view. Emergence always gives us something qualitatively new. But I am uncomfortable with relying on it to give us the whole Easter basket at one go.

JAY

Jay Lemke  
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----- Original Message -----

From: <[ssalthe@binghamton.edu](mailto:ssalthe@binghamton.edu)>

To: <[jaylemke@umich.edu](mailto:jaylemke@umich.edu)>

Cc: Mailing List

Sent: Monday, February 22, 2010 10:41 PM

Subject: holographic mind

Folks -- The question of phenomenological qualia, and the possibility that the experience of mind is irreducibly such a phenomenon, raises some interesting possibilities.

Consider the holographic hypothesis. The mind would be a source of 'reference waves' and 'reconstructive waves', which generate a hologramic universe from the incoming 'object waves' (sound, light, vibrations, whatever). This requires only a focus on wave phenomena, which, in some construals, would encompass everything in our umwelt. Then we could have scene I have contemplated several times.

I am driving along a highway, and I notice a series of pigeons sitting on wires along the highway.

I imagine that each one is observing the autos speeding by. Each mind holds an entire universe.

Each pigeon mind receives and interprets a fragment of information concerning the material world before it by way of its reference waves. Thus, within each pigeon's mind we have a whole seamless universe constructed by reference waves out of incoming object waves.

I also will have my own view of the road and of the pigeons, generated by my own reference waves.

Qualitatively, the world then would BE a bunch of fragments located within each of our minds, continually renewed by way of our energy flows.

STAN