

Considering General Schemas Theory using Bateson's definition of information as "a difference which makes a difference," (how) can we inform ourselves with the difference-making schema of pattern-breaking (using both information and meaning)?

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Kent Palmer, Dissertation: The structure of Theoretical Systems in relation to Emergence 1982 LSE UK

Updated Jun 29, 2013 · Author has **631** answers and **902k** answer views

I am blown away by this question. Someone actually read one of my papers and asked an intelligent question. It may take me a while to get my bearings in order to respond.

Not only that but someone else apparently responded probably better than I could myself.

Now for a pause while I reflect on the rarity perhaps cosmic uniqueness of this phenomenon

Like [Craig Weinberg](#) I am having difficulty understanding the import of the question.

But it is always good to back up and try to lay some groundwork. My answer will probably be skewed by the fact that I have been re-reading Being and Time by Heidegger and I also just read Terrence Deacon's Incomplete Nature which is to my mind a kind of rewiring of B&T within a present at hand mode but is relevant because it treats the Special Systems. The whole point of General Schemas Theory is to set the stage for approaching the nature of the Special Systems.

Terrence Deacon goes through all the basic concepts, like information, energy, entropy and tries to rethink then so there is a way to thing about the possibility of Life and Consciousness. In doing so he mentions Bateson's Difference that Makes a Difference which is just a way of talking about Shannon information. But Terrance Deacon makes the point that we need Boltzman's entropy to supplement Shannon's idealization of information within a communication context, but we also need reference and interpretation as well which is not part of Shannon or Boltzman's view on the phenomena they are narrowly studying.

Bateson had a relational view of everything, and his motto about difference that makes a difference is a way of stating that in terms of information. In other words not all differences COUNT. It is only certain differences that are marked as making a difference. Like in the thermostat the temperature that it is set at counts, but not all the differences between the degrees it traverses on its way to the triggering threshold at which the air-conditional turns on again. These higher level differences are relational. They are the real information, the other distinctions are not significant but merely form the background for what is deemed significant either by reference to some ententional phenomena that is an absentional evenity in Terrence Deacon's neologisms and you also need interpretation that is also outside the purview of the information exchange channel that Shannon is concerned with. So I suggest you see Terrence Deacon's treatment of Bateson's statement in Incomplete Nature go give a fuller context for the possible meaning of this phrase.

But also I think that Bateson also has in mind his meta-levels of learning, and one of the things about these meta-levels is that certain terms will mean something different at every meta-level. For instance Truth, Reality, Identity, and Presence change their meaning at every meta-level of Being.

I have another hierarchy I like to extol:

given
data
information
knowledge
wisdom
insight
realization

So we have to see that information does not stand on its own but is part of an emergent hierarchy between data and knowledge. Information contains surprises or as Bateson says differences that make a difference to somebody. One way to think about learning is in terms of the transformation of data into information and information into knowledge. But bateson comes up with a whole series of the meta-levels of learning, and at those various meta-levels I would not be surprised if the meaning of difference itself did not transform. For instance at the first level of learning we are attempting to identify significant information that coheres so we can commit it to memory which is our simplistic model of rote learning.

But Bateson goes on to talk about learning to learn. How do we learn to learn, well that means identifying some higher order difference between learning techniques and attributing significance to their differences and perhaps selecting different techniques for different persons or occasions.

Then he goes on to learning to learn to learn. Whats that? And so on but it is obvious that difference at this level is different from the differences at the other levels. So one way I like to think about this is to say that differences between meta-levels of Being are in effect the greatest differences that we can make between anything within the worldview. And as it turns out we can take every schema though its meta-levels of Being and what we do when we do that is get different structures and that is what lets us know that the schemas are in fact radically different from each other, we might say incommensurable templates of understanding which we apply to comprehend the extent of

something extant in spacetime.

So in effect what we have with the schemas are radical differences in comprehension of spacetime a priori synthesis that we project. But we show ourselves the fact that they are radically different in their essences by taking each one up the meta-levels of Being (commensurate with the meta-levels of learning) to see their difference which is set like and particular.

Because almost all of Bateson's insights are tied one way or the other to Russell's higher logical type theory I think Bateson is well aware of the different kinds of difference that appear at the various higher logical types and the differences between those types at each level. So in a sense there are pure differences that is rooted in the aspect of identity. But at each level of learning or Being these transform themselves into Deeper or Higher Order differences and Identities. That are themselves all different across meta-levels but also across schemas. And recognizing this is the deeper point that Bateson is indicating. Shannon did not really understand he was dealing with a type structure. But we know it now because our programming languages have type structures built in and information that is exchanged is done within the framework of a type system which by the way supplies some the nested redundancy needed to make the communication channel robust. So another thing that Bateson is indicating is that without understanding that information is structured by types itself, we do not really have a deep knowledge of information exchange. And Bateson I think was touting his relational model of systems as a way to get a deeper appreciation of what information is.

Of course here we must mention Deleuze and Difference and Repetition which studies this problem philosophically, and also his Logic of Sense which I think is the next book on from Russell's Higher Logical Type Theory (summarized by Copi). I recommend your looking into Deleuze and the light he sheds on these issues.

Basically my story goes like this. Once upon a time there was the Western Tradition that really only recognized one schema which was Form and everything was understood in terms of that. But then Kant came along and suggested that System would be a good addition to the form Schema. Later Mendeleev identified the structural schema which became popular is Science and led to Structuralism as the competing schema to System in the last century. But when we look at the literature in science we can distinguish lots of other schemas that people talk about now and again, so a general problem becomes what are all the schemas by which we preconceptually understand organization of things in spacetime when we project synthetic a priori. Oddly enough no one seems to answered that question. I have looked high and low for a precursor in this topic area of General Schemas Theory. But once you have it then to kick it off you need a hypothesis about how many there are and how they are related to each other. So that is what the S prime hypothesis is suppose to accomplish getting General Schemas Theory going and getting the arguments started for different hypotheses. Unfortunately no one else has weighed in as yet, so my S prime hypothesis remains unchallenged. Fighters without opponents can hardly claim to be champions. But it stands to reason that there must be some a priori synthetic level beyond the system, because we have multiple types of schemas that we know of so what is the complete set and how are they related together is an open problem in our tradition.

It turns out that a way to understand all this is via the idea of meta-dimensions. Schemas are at meta-dimension zero which gives us n-dimensional space. Kinds of Being as Standings are at meta-dimension one, and Aspects are at meta-dimension two. Interestingly I think all these ideas are

implicit in Russell and Bateson's ideas but no one pulled them out for some reason. When Russell hit the paradox of a class being a member of itself and Godel gave his proof then it is as if the tradition abandoned this line of research into meta-levels and types. Bateson tried to show they are all around us in every discipline but few took up the calling of exploring this horizon of research further. It is not until Deleuze that we get any real advance over what Russell and Bateson were saying.

Any way this is some background that might be worth considering and may help you to rethink your question .

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Craig Weinberg, Consciousness Conjecturer

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The wording of this question is very convoluted. I'll try to break it down into chunks first:

"Considering General Schemas Theory..."

Ok so we are talking about Kent Palmer's [General Schemas Theory](#) [↗], which (and please Dr. Palmer don't hesitate to correct me if I am mischaracterizing your work), has to do with extending Systems Theory. The paper identifies an emergent *ontological hierarchy* (of schemas) as follows:

- Pluriverse
- Kosmos
- World
- Domain
- Meta-system
- System
- Form
- Pattern
- Monad
- Facet

The paper also identifies an *ontic* hierarchy: "which might include gaia, social, organisms, organs, cells, molecules, atoms, particles, quarks, strings". The paper goes on to explain that "any of the ontological schemas can be applied to any of the ontic hierarchy thresholds"

What follows are integrations of some elegant philosophical and mathematical ideas aimed at clarifying the quantitative properties of nested emergent systems.

"using Bateson's definition of information as "a difference which makes a difference,"

The often quoted definition from Bateson originates from [Form Substance and Difference](#) [↗], where Bateson discusses the elementary unit of mind:

"I suggest to you, now, that **the word "idea," in its most elementary sense, is synonymous with "difference."** Kant, in the *Critique of Judgment*—if I understand him correctly—asserts that the most elementary aesthetic act is the selection of a fact. He argues that **in a piece of chalk there are an infinite number of potential facts.** The *Ding an sich* [thing as such], the piece of chalk, can never enter into communication or mental process because of this infinitude. The sensory receptors cannot accept it; they filter it out. What they do is to **select certain facts out of the piece of chalk, which then become, in modern terminology, information.**

I suggest that Kant's statement can be modified to say that there is an infinite number of *differences* around and within the piece of chalk. There are differences between the chalk and the rest of the universe, between the chalk and the sun or the moon. And within the piece of chalk, there is for every molecule an infinite number of differences between its location and the locations in which it *might* have been. Of this infinitude, we select a very limited number, which become information. In fact, **what we mean by information—the elementary unit of information—is a difference which makes a difference, and it is able to make a difference because the neural pathways along which it travels and is continually transformed are themselves provided with energy.** The pathways are ready to be triggered. We may even say

that the question is already implicit in them."

The concept here is perhaps, well, *different* from what the question intends. I think the original context is instructive, as here Bateson is referring specifically to sensory abduction - the perceptual filtering of external facts for inclusion as facts in an internal map. Information then is simply those facts, those differences which are within the capacity of a sensor to characterize and pass through the filter.

"(how) can we inform ourselves with the difference-making schema of pattern-breaking..."

I'm not clear on what is meant by this. Is pattern-breaking a technical term or just a general action of...analysis? Attention? Is the question about how we are able to create new information through analysis? If so, I would say that its because sense sensemaking does not occur in a vacuum, it arises out of fertile contexts. I'm not sure what is meant by a difference-making schema, as all schemas, in my understanding, would be information rich and produce differences in the same way.

"using both information and meta-system patterns that emerge from differences differing?"

Emergence is really only relevant from a local perspective. From a global perspective, information is recovered from other schemas, into the local system. The experience of being informed supervenes on a sensory-motive capacity for its qualities and integrative potential. This is why I don't think that a purely quantitative model of information is sufficient and the hard problem of consciousness is actually part of a larger Presentation Problem. Difference is not a thing which can exist independently of some capacity to discern. The two are the tail and head end of an Ouroboran monism in which the experiential entropy of privacy is exchanged for public thermodynamic entropy, and significance is multiplied by stripping out spacetime (which is the residual consequence of entropy).

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