Open conceptual modeling with Metapattern

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1. Living together in a single information space

We are in urgent need of a paradigm shift in conceptual modeling. Actually, we've more or less forced it upon ourselves by applying digital networking technology at the global scale. As we're interconnected across traditional boundaries of all kinds, and of course partly dissolving such crossings in the process, it has become radically more uncertain that our previously simple expressions will still be properly understood. What has locally always been sufficient as a text, now each needs to be complemented with explicit context for precise localization. Including context is what Metapattern is all about, facilitating open conceptual modeling.[1]

2. A semiotic ontology

While breaking with several more recent traditions, ontologically speaking Metapattern returns to an older tradition of singularity. Interconnection implies one world. Attempts at rational explanation should therefore start from a single ontology. Underlying Metapattern is an ontology merging transcendental realism as derived from Kant by Schopenhauer with Peirce's semiotics, and adding Ashby's concern for requisite variety. What results is what I've labeled subjective situationism. As it is vital to open conceptual modeling to appreciate such a philosophical grounding, I'll briefly introduce the concept.[2]

The so-called semiotic triad is attributed to Peirce. It entails a transcendentalism where sign mediates between object and interpretant. Peirce being a pragmatist, his idea is that an interpretant is what someone acts upon, i.e. behavior. The interpretant, activated by a sign, equals the actor's belief that some corresponding object exists.

It should already be clear that there's more to his pragmatism than Peirce's triad shows. For one thing, he didn't include behavior. Also not included is what Peirce refers to as ground. Taking a hint from pragmatism, I supplied each of the triad's elements with ground, thereby arriving at a hexad. This still leaves behavior missing, though. Just as pragmatically, what are the three dimensions of the hexad are each fitted with an additional element, yielding an ennead.

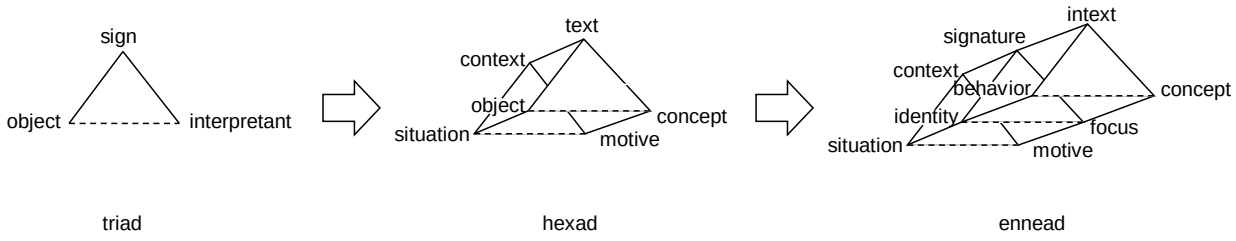

figure 1: Expansion from Peirce's triad, through hexad, to semiotic ennead.

[1] What I've later named Metapattern, has first been documented in 1991 in an essay in Dutch. An English translation is available as Multicontextual paradigm for object orientation: a development of information modeling toward fifth behavioral form which was included in my book (mostly in Dutch) **Informatiekundige ontwerpleer** (Ten Hagen Stam, 1999). A more systematic notation for Metapattern is presented in my book **Metapattern: context and time in information models** (Addison-Wesley, 2001). The notation was partly changed in 2002, a.o. to accomodate Cascading nil nodes in Metapattern (2012); see Metapattern, development of notation (2012).

[2] It is extensively developed and explained in my book Semiosis & Sign Exchange: design for a subjective situationism, including conceptual grounds of business information modeling (Information Dynamics, 2002).

This is not the place to elaborate on the semiotic ennead. Let me just suggest how enneadic dynamics accommodate variety. Suppose that focus materializes as a node in a network. And assume that the focal capacity may shift from one node to another. As some other node now acts as focus, it naturally comes with its particular both motive and concept. And so on …

3. Metapattern's informational relativity

What the semiotic ennead aims to summarize is a theory of cognitive relativity. At some time, a particular node is focus, while at some other time it may contribute to constitute a motive or a concept. The ennead builds the case for – subjectively believing in – a corresponding objective reality, that is, structured as behavior of a situated object. Then, the task for Metapattern is to exhibit the intermediary signing, corresponding in structure to what has been assumed for both (subjective) cognition and (objective) reality. As most people are most familiar with referring to an external, objectively taken reality, I'll explain how Metapattern exemplifies relativity by starting from objects et cetera.

What makes a particular object's behavior unambiguous is a particular situation. Then, given a situation and an object, they may be related as to yield the situated object with its specific behavior; see figure 2.

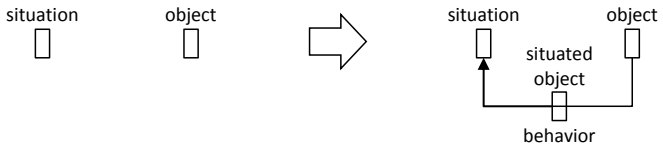

figure 2: Behavior is attributed to a situated object.

Situational differentiation of behavior certainly is not an original idea. The decisive contribution through Metapattern, though, is making the concepts of situation, object, and behavior relative. Where the nodes in figure 2 are still labeled in an absolute sense, figure 3 shows how both the situation and the object of figure 2 were established as situated objects, too. In, say, the other direction, the situated object of figure 2 may be taken as either situation or object for yet another situated object, and so on …

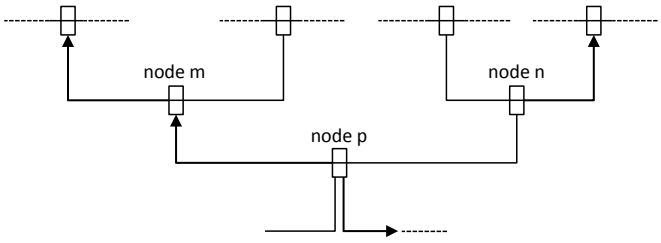

figure 3: Pick a node!

In the direction of increasing behavioral differentiation, that is, downwards according to Metapattern's visual notation, there's no real danger of infinite regression. The modeler simply stops when s/he no longer distinguishes relevant behavioral variety. Upwards, Metapattern posits a boundary node. As it is called horizon, it is drawn as thick line. A model starts from its horizon. In the reverse direction, all of a model's nodes somehow take their ultimate perspective from it. For the first nodes originating as situated objects from the horizon, the horizon is necessarily both situation and object. Figure 4 sketches a stylized model.

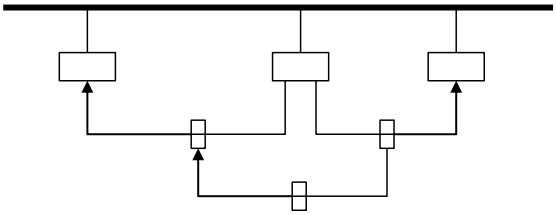

figure 4: Horizon as a model's final orientation.

4. Why arrows are not really important

In figure 4, the lines from/to the horizon are drawn without an arrow. In general, supplying the relations establishing additional nodes with direction only holds relative value. For it is often difficult to choose between what should count as situation and what as object to arrive at a situated object. My own practice, it seems, is to start from a node taken as object, and subsequently directing it, i.e. placing it, in a situation. But I find myself sometimes pointing the relation the other way around. That may happen when, as explained above, I find it hard to choose between object and situation. Or I may have, say, esthetical 'reasons.' For example, I just don't like arrows ending up at the horizon. Again, directing relations is not critical, as the resulting additional node is anyway uniquely constituted as situated object.

5. The idea of open conceptual modeling and designing information space

Including situation in determining behavior allows for an object's full variety to be modeled. Also what may appear as contradictory behaviors from an absolutist perspective, applied mostly implicitly and which is therefore all the more impossible to address, dissolves into separate behaviors delineated by situations as such. Still confused? Change and/or add situations accordingly. When behaviors change, their alliance with object and/or situations may have to be adjusted, with objects and situations added as required. Only by providing flexibility for not just variety but for variety-in-flux is a modeling method up to the task of supporting the open information space of the network society.

It should be clear that the assumption of behavioral relativity or, in other words, interdependency, involves a departure from modeling as analysis. Modeling at the scale of behavioral variety is not a matter of taking objects for granted in the sense of logical atomism, with analysis limited to just sticking equally absolutely valid labels on. Instead, in the open information space contingency rules. Modeling must be practiced as design. A designer doesn't just passively picture information space, but also actively helps to constitute it as her/his design is implemented. It is where and when mistakes are inevitable, making it even critical to avail of a method allowing for opportunities to be explored and errors to be corrected as soon as they are discovered.

At the scale of open information space, there's of course not only one designer active. Many previously distinct models will eventually have to be merged, at least conceptually aligned. A practical start is to view each of those models as pertaining to 'its' situation. With corresponding contexts made explicit, they can be crudely integrated. As soon as they are governed by a joint horizon, detailed design may follow for optimizing information management at the now larger scale.

6. Relevance for human use at open scale

The move from analysis to design emphasizes that Metapattern is oriented at human use of technology. When information management is still approached from a limited technological perspective, there simply is no paradigm shift possible and our information space continues to develop into chaos. There is only one way to design for requisite variety. The professional,

responsible designer/modeler must be ontologically aware. S/he needs to have a fully developed theory of human cognition and sign exchange. It is how designers are relevant.

7. Some further reading on Metapattern (only English-language texts listed)

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Person's identity in community, January 2010.
Practice pattern: beyond central registers etc., commissioned by the Office of the Standardisation Forum (Netherlands), 29 juli 2008; A0-format recommended for printing.
How so-called core components are missing the point, September 2007.
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Semiotic connectionism in artificial intelligence, April 2007.
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Information metatheory, in: **PrimaVera**, working paper 2003-12, Amsterdam University, 2003. Also in: Sprouts, 3(5), 2003.
Metapattern for converging knowledge management with artificial intelligence, 2003.
Anatomy of Contragrammar, 2003.
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Mannoury's significs, or a philosophy of communal individualism, 2003.

Victoria Welby's significs meets the semiotic ennead, 2003.
Dia-enneadic framework for information concepts, 2003.
What is an instance in information modeling?, 2002.
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The ontological atom of behavior: toward a logic for information modeling beyond the classics, in: **PrimaVera**, working paper 2002-5, Amsterdam University, 2002. Also in: Sprouts, 2(3), 2002.
Semiosis & Sign Exchange: design for a subjective situationism, including conceptual grounds of business information modeling, Information Dynamics, 2002.
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