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Metapattern of natural complexes, Enlisting Justus Buchlerâ€™s metaphysics for informational infrastructure

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Abstract

The Internet paradigm implies the potential for infinite informational interconnectivity. In practice, it fast approaches a level of intensity, complexity etcetera where dedicated, say one-to-one, ad-hoc solutions hamper responsible usage and also further development. Generic technical solutions have of course been developed and made available as infrastructure. Being an informational infrastructure, however, it should include provisions for conceptual variety. Metapattern, as a method for information modeling, supplies the perspective from which to recognize how requisite variety for the conceptual aspect of information is still lacking from current informational infrastructure. Metapattern also allows to recognize work from earlier epochs, i.e. when the practical problems of managing informational interconnectivity were unheard of. It appears that some thinkers already developed rich conceptual frameworks, say, ontologies, catering to a variety that is now generally impossible to deny. An example is Justus Buchler, an American philosopher. After a short introduction to Metapattern, Buchlerâ   s metaphysics of natural complexes is outlined and discussed. His work should inspire taking information management to support interconnectivity such as the Internet delivers, and should continue to deliver unambiguously.

Keywords: information management, Justus Buchler, Charles Peirce, natural complex, Metapattern, informational infrastructure, metaphysics, ontology, semiotic ennead, architecture, variety

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The Internet paradigm implies the potential for infinite informational interconnectivity. In practice, it fast approaches a level of intensity, complexity etcetera where dedicated, say one-to-one, ad-hoc solutions hamper responsible usage and also further development.

Generic technical solutions have of course been developed and made available as infrastructure. Being an *informational* infrastructure, however, it should include provisions for conceptual variety. Metapattern, as a method for information modeling, supplies the perspective from which to recognize how requisite variety for the conceptual aspect of information is still lacking from current informational infrastructure. Metapattern also allows to recognize work from earlier epochs, i.e. when the practical problems of managing informational interconnectivity were unheard of. It appears that some thinkers already developed rich conceptual frameworks, say, ontologies, catering to a variety that is now generally impossible to deny. An example is Justus Buchler, an American philosopher. After a short introduction to Metapattern, Buchler's metaphysics of natural complexes is outlined and discussed. His work should inspire taking information management to support interconnectivity such as the Internet delivers, and should continue to deliver unambiguously.

About the author:

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1. Toward integration through multi-level interdependency

Already for several decades, the concept of architecture is (also) applied to digital information management. Has it, really? Architecture has now more or less replaced system as a popular, i.e. usually uncritical, label for suggesting quality. Often overlooked, then, the architectural rhetoric in information management actually solidifies a narrow horizon.

One way of promoting an awareness of current myopia is making the actual comparison with architecture as it is relevant for the (more) traditional built environment. It should become apparent that the paradigmatic object for digital information management is still predominantly a separate room (read: application), or at most a single building (read: enterprise application integration).

Built environment architecture has of course long since broadened its horizon to include city planning, landscape architecture, and so on. And it recognizes built objects at different scales essentially being interdependent. For example, a building contains rooms as much as rooms constitute a building. Likewise, a city contains buildings, public spaces, etcetera as much as all those objects constitute a city ... thereby making rooms and city interdependent, too.

It's obvious that a city is not just another, but larger building. And it most certainly is not just another, but only larger room. It is therefore *not* simply a matter of applying successful small-scale methods for design, development, etcetera, at the appropriately larger scale. A city, when I'm allowed to stick to this comparison, critically is an object *sui generis*.

By the same token, informational interactions occur beyond the individual place for work, for recreation, or whatever. Through digital networking, people are now directly connected beyond a (work) department or organization and so on. Digital support for interactions at the scale of dynamic information society requires an explicit paradigm with adequate methods for managing information variety which arises from borderless, near instantaneous interconnection.

Small-scale methods ignore variety. Reconciliation of informational differences and similarities is simply not addressed. For locally, standardized meanings can usually be practically enforced. Take the concept of employee. No conflict between meanings should occur as long as the pertinent information is kept isolated, as it always has been simply due to before-connectivity technology, within the boundary of a personnel information system. It right away changes with the so-called integration of, for example, a customer information system. An employee might be a customer, too. When (s)he is, some different attributes are relevant as corresponding situations dictate. But then, some other attributes are valid for both behaviors. As the horizon for such integration widens, and of course that is precisely what we're not only witnessing but actively contributing to, a rigorous method to *structurally* determine and subsequently control informational differences and similarities soon, very soon, becomes a necessity. I've proposed Metapattern as the method for information management at infrastructural scale.

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With only a juxtaposition of small-scale politics, the penalty of thwarting relevant differences is still hardly noticed, … be it at the expense of the politically powerless at all locally separate, narrow horizons. Occupying an inclusive, expanded horizon leads to qualitative change. At the emerging scale of a civil informational infrastructure, varied interplay of difference and identity is actually characteristic.[31] How Metapattern supports managing information variety is only outlined in this paper; of course, references for follow-up are supplied.

2. Construction of an audience

Expanding information management's horizon to arrive at a *sui generis* civil informational infrastructure on a digital basis qualifies as a complex innovation. As much as difficulties should also not be exaggerated, it's impossible to overestimate the novelty of methods for controlling the information variety at an unprecedented scale.

A general way of looking at it shows information-related practices only being once again the subject of intricate diffusion. So, another cycle of what generally remains information management occurs now that *digital* technology is widely available.[30]

Details certainly count for the big picture, though. An earlier example of impact-laden information technology is of course the printing press. What the current cycle, i.e. development of *digital* networking, helps accomplish is that exponentially more, and more varied, information can become integrally accessible, regardless of distributed origins. How is such variety controlled?

Referring to a paradigm shift should emphasize that essentially a change in outlook is required. It therefore takes an inordinate amount of effort and time. What needs to be overcome are at least some of the most critical parochial interests for making a productive start at the infrastructural scale. Such an infrastructural turn might also be dated as BC, this time with BC standing for Before Connectivity.

The paradigmatic nature of the infrastructural turn in information management implies that as yet no established audience exists. Limiting myself to this article, do I address practitioners in information management? Of course I would very much like to reach them. However, is that realistic? Probably not, not in the short run, anyway. Still, as the infrastructural turn is only a turn when it is executed in practice, I must include practitioners. However, should I rely more on first convincing information management theorists? I'm afraid there's a practical problem with theorists. My impression is that they are distancing themselves from actual practice. How can they acknowledge the need for an infrastructural turn, and subsequently appreciate an exhibit of a new direction, when they are far removed from relevant experiences?

This article exemplifies that an orientation for new directions, especially for information management, may resort to ontology, respectively metaphysics in their philosophical sense. Does it mean that I count metaphysicians as belonging to my intended audience? I do, in fact. They may also not be easily

persuaded, though. A philosopher might argue that (s)he doesn't see how information management might be relevant. I agree, normally it most likely is no business for metaphysical speculation. My argument for *especially* raising a philosophical interest, though, is that the indeed highly practical infrastructural turn in information management appears to go straight to the heart of metaphysics. A qualitative change in coordinating information variety evokes a corresponding metaphysics (which I will hold synonymous with ontology) that philosophers, I find, can ill afford to neglect: theory is relevant for practice.

I've written this article on the assumption that it contributes to constructing the audience that is required for, borrowing from Kuhn, making and diffusing critical rather than normal change, i.e. for what might be called the turn infrastructural turn in information management. Practitioners should recognize problems that so far remain unsolved, and regrettably so, in their daily work. And both metaphysicians and information management theorists are, I hope, inspired by an already rigorous outline of what needs to be developed further as relevant theory for our era of connectivity.

3. On explaining a qualitative innovation: why Buchler's metaphysics?

Metapattern is a method for information modeling for which I laid the groundwork around 1990.[18] A recursive concept of context, combined with time management for every resulting informational node, allows for precisely configuring informational differences and identity. Its accuracy never fails, that is, regardless of scale (also read: horizon).[19] I've already shown Metapattern to go beyond the so-called relational approach[19] and advanced object orientation.[29]

A rational dilemma of diffusing any critical innovation is that more variety can never be explained from … less variety. So, for Metapattern I am drawn to somewhat similar conceptual frameworks, or even problem statements. In fact, I'd rather not be too original at all. What I'm hoping for is to establish relevant correspondences, i.e. a persuasive metaphor. I always try to develop, say, intrinsically valid arguments but, as is characteristic for qualitative innovation, they may remain unrecognized for some time. In the meantime, building a case for Metapattern also leads me to suggesting supporting material. For example, see my papers on significs as exemplified by Victoria Welby (1837-1912),[23] respectively Gerrit Mannoury (1867-1956).[24]

At some point, early 2006, searching the Internet I hit upon a reference to the concept of natural complex. I was directed to information on the philosopher Justus Buchler (1914-1991) whose *Metaphysics of Natural Complexes* I subsequently studied. I obtained a copy of the second edition, published in 1990.[5] Its first edition was published in 1966. Please note, an outline of Buchler's metaphysics already appeared in 1951 with *Toward a General Theory of Human Judgment*.[2] Immediately, I was struck by, indeed, strong similarities with Metapattern's underlying conceptual structure.

From 1951 to 1974, Buchler published five books developing his conceptual framework, or metaphysics. Only in his last book does he turn to applying it at some length to a particular theme. From my own preoccupation, I cannot help finding it surprising that *The Main of Light* provides a sketch of the nature of … poetry.[6] Couldn't Buchler really think of socially more pressing questions to address with his wide-ranging concepts?

In what follows here, I argue for relevance of Buchler's framework for, as I've coined it, civil informational infrastructure. Although Buchler designed his metaphysics of natural complexes long before I even started working on Metapattern, I'll attempt mostly to explain the former in terms of the latter. The reason is not just that I'm more familiar with Metapattern. I also hope to establish that Metapattern, together with the so-called semiotic ennead I subsequently drew up to ground it, i.e. as a metaphysics annex ontology, helps to clarify Buchler's metaphysics of natural complexes. It should come as no surprise that solutions for new problems in information management carry philosophical import. As my discussion of the work of Justus Buchler shows, it pays to query conceptual frameworks that so far didn't make it as mainstream paradigm. Requisite variety cannot be denied indefinitely when practical needs are pressing as they are now. A vision of the information society requires a structurally sound conceptual foundation.

4. Again, why Metapattern turns to coordinating differences

Preparing for an introduction (section 9 to 13), discussion (sections 9 to 3, respectively 14 to 17), and projection (sections 18 to 23) of Buchler's concepts, sections 4 to 8 offer an informal sketch of the general idea of Metapattern.

Until quite recently, an information system of the digital variety was almost by definition an isolated tool. As *information* system, it may be assumed to be about …, well, about something else. Somewhere in reality taken as primary existence, usually objects are believed to … exist separately. Then, the information system in question keeps a record of some objects.

As it happens, two or more of those isolated information systems may each keep a record of what is believed to be one and the same object. Upon closer inspection, though, respective records often *both* differ *and* show — at times extensive! — overlap. For example, a person-as-employee has an employment contract with the employer, while a person-as-customer places an order with a supplier. Yet, as a person (s)he is living at the same address in both cases (also read: situations). And now that I've mentioned employer and supplier, cannot they really be one and the same company, but with some significant differential attributes/behavior in corresponding situations? The essence of Metapattern lies in pursuing relevant differences. Please note that the benefit not only comes from recognizing added information value, which of course is a difference by definition. As realistic

differences are respected, there's usually no problem left to benefit from similarities, too. That's really what the infrastructural turn in information management eventually accomplishes.

The degree of overlap was of no real concern as long as different information systems about the same object(s) could *practically* only function independently. Why bother with reconciling information? Or making relevant differences explicit? For regretful as it was, there was believed to be no solution for coordinating widely held information. Problems of poor quality, high costs, low security, etcetera tended to be largely accepted, if not after a while ignored altogether. It became accepted as a fact of information management, i.e. unchallenged.

However, further developments in digital technology for (tele)communications in the limited sense of signal transfer have since removed constraints. That is, what used to be separate information systems can now be reliably, instantly connected. The Internet, interorganizational value chains, citizen involvement, etcetera. So-called domain-specific infrastructures also cannot last in the era of connectivity because many objects are now recognized as relevant for several such domains. The old problem simply reappears. For how can domains be coordinated? There's an end to what can be reached from extrapolation. Sooner or later, a new coordination method is required for the practically limitless information variety. It appears difficult, though, to change *conceptual* perspective accordingly.

A paradigm shift is required. It might also be called a turn because the assumption of similarity that was valid for a small-scale, isolated information system is increasingly counterproductive. Instead, the opposite assumption of difference is the only valid response to large-scale connectivity and the information variety it breeds. In method, the exception need shift, or turn, into the rule. Metapattern addresses such pragmatics of informational infrastructure.

5. Nothing works without context, period

Metapattern's formalism is fully explained elsewhere.[19; 26]. Here, I'll take a familiar bearing. Assuming two original, separate information systems A and B is enough to explain Metapattern's principle of contextual differentiation. As the purposes likely differ for which such systems A and B have once been developed, the diagram in figure 1 shows a generalization of how the pertinent information about a particular object *x* is distributed. It says there's likely to be information that is jointly required for both purposes. And some other information is only useful for one of both purposes at the time.

1. Separate, limited 'horizons'

object *x* in A   object *x* in B
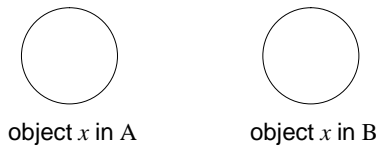
2. Joined at an encompassing 'horizon'

object *x* in A-minus-B   object *x* in B-minus-A
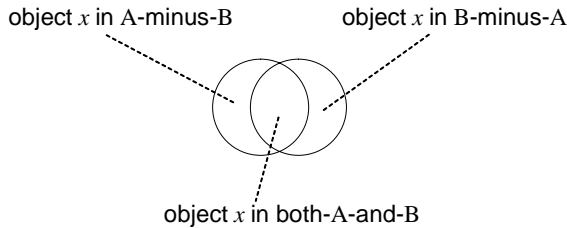
object *x* in both-A-and-B

Figure 1: Distribution of information in two traditional systems, given one object.

Taking up the earlier example of employee (A) and customer (B), and with object *x* as a particular person,

— an employment contract would be an attribute of object *x* in A-minus-B,
— an order would be an attribute of object *x* in B-minus-A, and
— an address would be an attribute of object *x* in both-A-and-B.

Metapattern can now also be explained from the recognition that a representation of information distribution, as in the lower part of figure 1, is actually still strongly biased toward the increasingly obsolete tradition of conceptually self-contained systems/tools. For figure 1 still defines distribution in terms, in this case, of configurations of A and B as the separate sources to consider merging from. Indeed, starting from A and B there will be overlap as a result. Metapattern, however, starts from precisely the opposite direction. Never mind how it comes about, what always 'stands' at any point in time is a distribution where the record of object *x* may be constituted by disjunct, say, subrecords. Following the example here, there are three such parts.

Each subrecord is about object *x*. Metapattern's mechanism for telling them apart is: context. Equally disjunct contexts are required, three, again in the example given. Those contexts might be called

— employment,
— customership, and
— residence.

Please note that context thereby acquires an objectification, too. It most practically serves to connect specific attributes with accuracy. So, for every relevant context there is a particular, specific subrecord about object *x*. In order to emphasize how context and subrecord correspond directly, Metapattern proposes a new label for subrecord: intext.

I repeat that here I only attempt to suggest the flavor of Metapattern. See the references, especially [19] and [28], for an exhaustive treatment of Metapattern's formalism.

6. Signature as the turning point

A context may hold several intexts, i.e. connect to subrecords for different particular objects, say an employment contract for the person-that-Suzan-is and another for the person-that-John-is. An explicit identifier, or signature, mediates between a particular context and what corresponds to it as the intext for object x. The signature of object x, or signature x, for short, is identical across contexts. So, Suzan's signature is invariant within the infrastructural horizon, so is John's, etcetera.

Yes, it is of course possible to have one signature refer to another, vice versa, at what may be considered the same level. That would take yet another … context. See also the discussion in section 13, below. But please note as the crucial point I'm trying to make here, that a signature is both contextually and intextually empty. And precisely because it is turned void of whatever both determinative and behavioral significance, it firmly establishes intercontextual relationships for object x. Figure 2 provides an overview of the concepts that have so far been introduced for Metapattern.
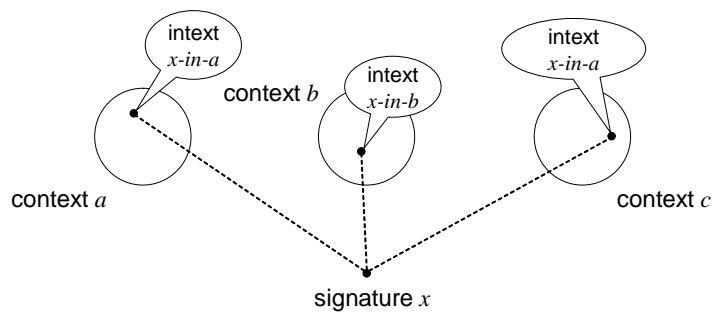

Figure 2: A first overview of Metapattern concepts.

7. Compactness and abstraction: relative concepts for a recursive function

The next step in understanding Metapattern is to consider how context, signature, and intext constitute structure as relative concepts. For example, context c is not as a whole related to signature x. Instead, their relationship actually occurs between signatures, only. With, say, signature c as single point of connection for signature x as far as the intext corresponding to context c is concerned, the (meta)pattern of figure 2 is simply repeated with shifted parameters. This is Metapattern's direction of so-called upward decomposition.

Downward decomposition is a traditionally more familiar procedure. With Metapattern it means that for a specific context, signature x is also not related to the corresponding intext as a whole, but only to further signatures, too. Figure 3 shows how moving between signatures at different levels supports the

relative nature of context and intext. See elsewhere for more detailed illustrations on how up- and downward decomposition provide flexibility through relative concepts.[26; 12; [31]
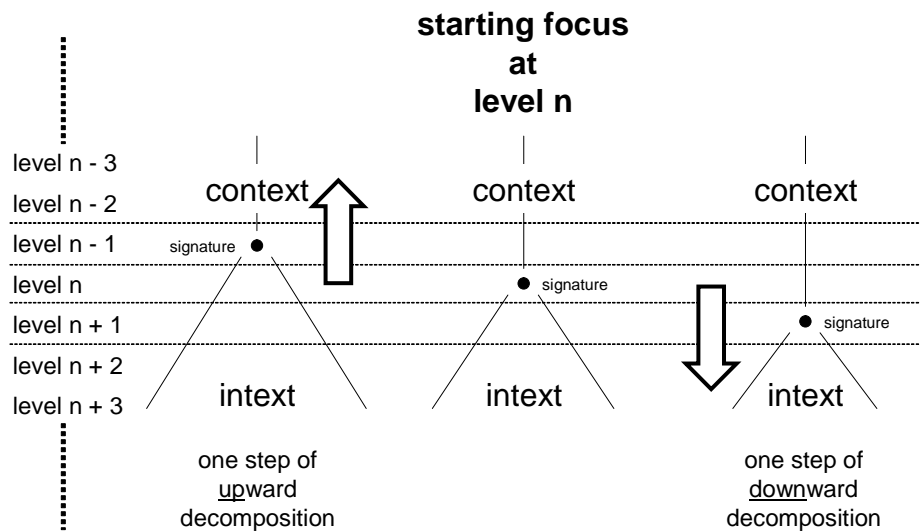

Figure 3: Metapattern's relative concepts.

8. Opening up the traditional boxes

Again I emphasize that it certainly is not my intention to give a full account of Metapattern's … pattern, here. I have by now sufficiently outlined Metapattern's key concepts, and what their irreducible structure is, for providing an angle from which Buchler's metaphysics may be profitably discussed. Before I turn to his framework, though, let me add some remarks on what critically distinguishes information management-the-Metapattern-way from traditionally isolated information systems.

Because of its inherently limited pragmatic scope, a traditional information system takes context for granted. It is often situated, much as if a blind-walled container would be dropped somewhere, with interior decorators getting to work only on the inside while keeping the door through which they entered tightly closed. The environment of the container, let alone how its interior might interconnect with other containers and how their interiors function, is not or hardly at all considered.

In other words, context remains external to every isolated information system. People, please note, designers often included, are therefore habitually unaware of how detailed their (re)actions are essentially contextually differentiated, mixed, etcetera. For they are accustomed to switching wholesale from one information system to another, thereby moving from one context — situation, rather, as will be explained in section 4 — to another without realizing what really affects their change in behavior. They completely step out of one container and into the next, disregarding what those might have in common.

But what if there are no longer such separate information systems, that is, allowing for such external and therefore largely implicit contextual/situational switching by human operators?

At ever increasing scale of coordinated information management, the switching mechanism should actually become more finely tuned. There's no paradox involved. Distinctions don't follow any longer from a person putting down one tool and picking up another, or moving from one container to another. Such cues disappear as traditional, separate tools merge and civil informational infrastructure covers more and more aspects of interactions. Of course, the fundamental need for distinctions doesn't evaporate. The potential, now driven on by development of digital technology, for connectivity, integrated tooling, and so on, must be matched with a new balance. Metapattern's claim at requisite variety involves necessary and sufficient context as unambiguously constituting information, too.

9. Visualizing Buchler's basic concepts

To my knowledge, Buchler didn't occupy himself in any way with qualitatively changing demands for information management as a result of developing digital technologies. Secondary literature also doesn't suggest he might have been interested in that direction.[16; 13] Yet, his framework is immediately and highly relevant for so-called conceptual information modeling, too. I'll quote liberally from his publications, establishing an order that I find is most congenial to my sketch of Metapattern, above, and of the semiotic ennead, below. I hasten to add that I start with a rough analysis, only to refine my discussion later on.

As I've already indicated, it is impossible to render an adequate linear account of what is essentially meant as a framework with irreducible elements, i.e. where they mutually constitute each other. There is no other way than to plunge in somewhere. Ever widening the exposition, an author must hope for a sufficiently patient reader who, after a while, feels intrigued to respect the proposed irreducibility for her or his own experiments. Buchler is no exception. He starts off as follows:

> Whatever is, in whatever way, is a natural complex.[5:1]

Buchler continues to argue for his terminology. Why complex? Why natural? His caveats are indeed relevant, but I'm apparently not so burdened by whatever ill-directed meanings may historically have already been attributed to, especially, object. I seem to agree with Geiger on this.[9] So, I plunge in right beside Buchler and state that I hold natural complex and object as synonymous. I understand object here in the Metapattern sense, of course.

Instead of natural complex, Buchler also writes complex, for short. At first sight, then, a sentence such as

> [a] complex has an *integrity* for each of its ordinal locations[5:22]

looks daunting. Later, I'll apply Metapattern to explain it. Still too general I find that Buchler writes that

[a]n order is a sphere of (or for) relatedness.[5:95]

Isn't that what he designed the concept of natural complex for, in the first place? My own caveat here is that no sign is exempt from context. Indeed, my context here for … context is Metapattern. But then, what is Metapattern's context, etcetera? Below I'll point out how horizon sets the behavioral limit for context; I should already mention that, as limit, it can be varied, too.

Regarding Buchler's use of the term order, my impression is that indeed he varies its context somewhat. It results in correspondingly different meanings. That doesn't have to pose problems, as long as it is clear where he switches so that the reader is able to follow one difference from the next. In search of coming to terms with "ordinal locations" I derive direction from his remark that

[e]very complex may belong to more than one order, and conceivably to any number of orders.[5:13]

I can translate freely, saying that every "[object] may belong to more than one [context]." Yes, an object may belong conceivably "to any number of [contexts]." So, at least for the moment, in addition let me also declare context synonymous with order. What follows is that complex-belonging-to-an-order amounts to complex-occupying-an-ordinal-location. But it's never the whole complex that is ordinally located, just its corresponding integrity:

[E]very integrity is "conditional," in the sense that it is determined by some ordinal location of the complex.[7:217]

My idea would be that such an ordinal integrity is an ordinally determined part of the whole complex. For the convenience of comparison, let me call it implex. Then, an ordinal integrity, or implex, consists of what Buchler calls traits:

The term "trait" probably is the most satisfactory of the terms that can serve to identify a constituent of a natural complex.[5:12]

In figure 4 I've tried to render how some of the concepts basic to Buchler's metaphysics are related, including some terminology I've added myself. Such visualization is actually missing with Buchler. I find it often greatly assists understanding, as it (also) helps to enforce rigor.
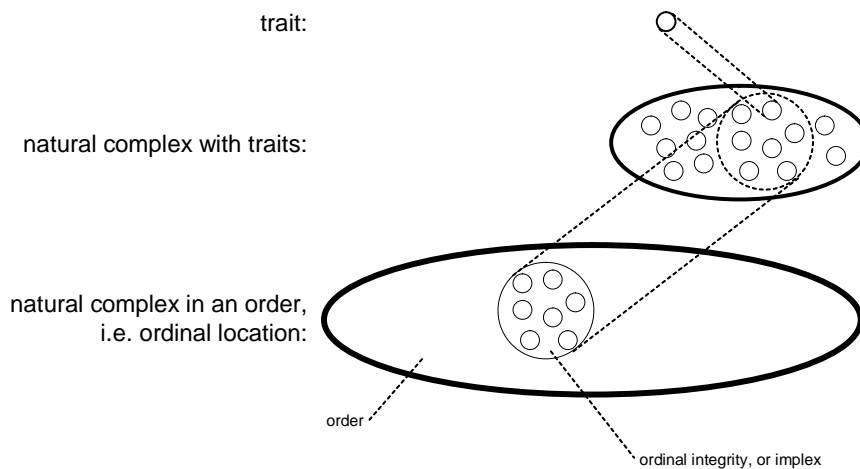

Figure 4: A first view of natural complex and related concepts.

10. Practical relevance of theoretical rigor

Unlike my assumption for Metapattern, Buchler doesn't say anything about a complex's orders being disjunct. I would say he is not concerned:

> [A] complex (whether temporal or not) may have a different integrity in each of the orders wherein it is located[.][7:215]

My idea is that producing a theory without corresponding experiments runs the severe risk of not exposing such vagueness. It is when concepts are put to practical use, that rigor actually equals relevance. So, with Metapattern context (order) is defined to determine non-overlapping intexts (ordinal integrity/implex) for an object (natural complex). If the assumption of disjunction is absent, whatever informational infrastructure collapses under unresolved ambiguity.

However, Metapattern generally shares with Buchler's framework the relative nature of key concepts. As Buchler writes:

> No complex is a mere collection of traits. It is an order of traits. Conversely, any order must (by definition) be a natural complex.[8:237]

Please note that conceptual relativity is the condition for operational recursion. And it should be recognized that formal recursion holds a special interest for digital engineering. For a programmed computer doesn't really mind repetitious work; it operates mindlessly, and it does so increasingly fast with every technological generation. So, especially for benefiting from digital technology, the practical value of deriving rigorous recursion from structural relativity is enormous. Buchler deserves full credit for pioneering the power of relative concept, even where he didn't consider application.

Above, I've briefly explained up- and downward decomposition where, say, first-level differentiation of context (upward, that is) brings other objects into focus by their respective signatures. From every contextual signature, upward decomposition may proceed until the modeling horizon is reached. In the same manner, first-level decomposition of intext (i.e. downward) also shifts focus to other objects by their respective signatures. In this direction, downward decomposition may proceed until no further differentiation into details is required.

As I've just indicated, Buchler doesn't examine a working mechanism for a hierarchy of relative concepts, yet he

> conceive[s] of every trait as a natural complex, and therefore of every natural complex as constituted by subaltern complexes. Every complex (complex of traits) is thus a constituent of some other complex and includes other complexes as constituents of it.[5:13]

Agreeing with Buchler, I emphasize that such a conceptual hierarchy does not at all imply an absolute hierarchy of objects or natural complexes. For example, start from downward decomposition, i.e. adding detail in the sense of attributes/traits. It always occurs within a particular context. Somewhere

down the line, then, a signature *may* appear for an object whose signature appears up the line for a different context. Buchler doesn't provide instructions for unambiguously modeling such myriad of relationships. I suppose that for his (more) theoretical purpose, he found it sufficient to specify ordinal location, and leave it at that.

11. Anatomy of conceptual relativity

For modeling variety in practice, though, that is still (far) too coarse. Metapattern reduces the interface between context and intext to the minimum: an object's signature. In fact, every occurrence of a signature is unique. It is precisely such an operationally balanced minimum which supports optimal coordination. Metapattern also allows relationships to change over time. So, Metapattern refines Buchler's idea of ordinal location. It literally pinpoints where context meets with intext for an object at any particular point in time. Any object (complex) is 'located' in a context (order) through its precise signature, connecting the particular context (order) with the corresponding intext (ordinal integrity, or implex).

I repeat that the importance of relative concepts for constituting a framework cannot be overestimated. In Buchler's own words, quoting some representative statements (see section 6, below, for an additional compilation):

> [A]ny complex is a complex of complexes.[5:2]
>
> [E]very complex is an order of complexes and belongs to an order of complexes.[5:13]
>
> Every complex is an order and belongs to an order of complexes.[5:93]
>
> Belonging to an order, being located in an order, being in various orders, being an order, are conceptions indissociable from the conception of a natural complex.[5:93-94]
>
> An order is a complex in so far as it comprises a *multiplicity* of traits. A complex is an order in so far as it *delimits* traits and serves as a *location* of traits.[8:239]

Metapattern was indeed developed for the purpose of dealing with behavioral multiplicity while maintaining precision in information management. In hindsight, it can be seen to depart from Buchler's metaphysics mainly by a. the constraint of disjunct contexts annex intexts for object modeling and b. signature occurrence, only, as the minimalist mechanism for relatedness. Such characteristics help clarify several other concepts of Buchler.

12. The elusive whole … as whole

For example, I read Buchler as applying integrity with two scopes. I have already quoted him on a "complex ha[ving] an *integrity* for each of its ordinal locations." It has led me to specify such integrity as ordinal integrity. Qualifying it as ordinal distinguishes it from, say, the totality of a natural complex. As Buchler argues for such totality,

> we wish to be able to regard it as the same complex despite its different roles and aspects, its variations[.][7:215]

At this encompassing scope, as far as a particular complex is concerned, Buchler introduces the concept of contour:

> The continuity and totality of its locations, the interrelation of its integrities, is the *contour* of the complex.[5:22]

And

> [t]he contour is itself an integrity, the gross integrity of that which is plurally located, whether successively or simultaneously.[5:22]

Metapattern, of course, struggles with the same confusion. It still mentions object, but what can actually be known are always only an object's contextually disjunct parts. Or, as Buchler explains,

> the traits of any complex can never be regarded as fully and finally ascertained or completely circumscribed. A complex, if it is accessible at all, is analyzable and interpretable without end; or to speak in a more generic way, is manipulatable in an indefinite number of orders.[5:5-6]

The signatures placed, as signature instances/occurrences, in different contexts are what keep those parts together throughout an information model, allowing what seems like a whole to move from one part to another. Precisely because Metapattern avails of the minimalist concept of signature, there is no need for a compensating the maximalist approach to the concept of object. From occurrences of similar signatures, Metapattern can always construct an overview of parts, say an object's contour. But why add contour as a concept? From Metapattern it may be seen that in fact it is synonymous with object itself. And reasoning from signature, it is then recognized that contour is not limited to ordinal integrities (implexes), but also includes the orders (contexts) wherein they are located.

In a similar vein, Metapattern turns the concept of identity inside out. Identity is constituted by coordinated differences. For each context, an object's intext is … different. In this case, I find Buchler again already expressing a similar notion, for example,

> the notion of contour […] helps us to define identity; it accounts for why the different integrities of a complex do not dissolve the complex into a chaos.[7:215]

According to Metapattern, distributed occurrences of similar signatures establish order for an object's model. Buchler writes that

> [t]he *identity* of a complex is the continuous relation that obtains between the contour of a complex and any of its integrities.[5:22]

Here, in particular, I would like to be more specific about integrity and therefore write ordinal integrities, or just implexes. I find it confusing to suggest a difference between "a complex" on one side, and "the contour of a complex" on the other. Why not state succinctly that the identity of an object is the relation between its intexts? Referring to intext implies context.

13. On anonymity

A primary goal with this paper is to demonstrate Buchler's relevance for information management under conditions of unbounded variety. Here, my way of looking at the metaphysics of natural complexes has been to document it as a precursor of Metapattern. When the latter is relevant, so is the former.

Concluding this preliminary discussion I refer to an application of Buchler's metaphysics made by Kathleen Wallace as she addresses the urgent issue of developing an information-age concept of anonymity. Wallace starts with a short definition:

To be anonymous is to be non-identifiable in some respect or context.[17:23]

Where she specifies that

anonymity [i]s noncoordinatability of traits,[17:23]

I find Wallace is already clearly indicating, albeit its absence, the mechanism of coordination across contexts/respects. Anonymous behavior, then, is a difference that remains unconnected with some other differences. Or, when anonymous, the possibility of coordination is not consummated for whatever reason. Identity, on the other hand, is the actualization of coordination.

From operational requirements, Metapattern moves beyond indicating the coordination mechanism. Through signatures, coordination is in fact unambiguously established. Figure 2, above, clearly shows how related signature occurrences connect contextual intexts for an object. It simply follows that the absence of related occurrences amounts to uncoordinated intexts. What cannot be reached because occurrences are unrelated, is mutually anonymous by definition.

Does it mean that an object's signatures all have to be similar within a horizon? In fact, one signature could be used for some contexts, another signature for some other contexts, and so on. When , as everywhere, occurrences of such signatures themselves remain unrelated, several spheres of separate identity result, where of course an object's behaviors within one sphere are conducted anonymously from the perspective of all other spheres. As Wallace argues,

with anonymity typically, there is some trait which is known — for example, an action of some agent(s) — but it cannot be coordinated with other traits of the agent(s), so that the identity of the agent(s) is unknown to others except as performer(s) of the act or possessor(s) of the trait.[17:31]

Where Buchler still seems completely unaware of the so-called information society, Wallace productively applies his metaphysics to the necessarily foundational issue of (non)coordinatability.

Metapattern helps to design the operational foundation, i.e. as a civil informational infrastructure where interests are socially balanced. Wallace introduces anonymity as a crucial aspect.

14. Irreducible naturalism: integrating semiotics

Above, I already proposed some streamlining of Buchler's framework. For example, contour seems superfluous. Where complex is seen as a totality, contour equals it.

I don't recognize Buchler making contexts explicit, i.e. one for complex as a whole, or contour, and another context for complex as a part, or ordinal integrity (implex). Especially with such key concepts, though, I would avoid possible confusion altogether by using different singular terms in the first place. The following sections continue with suggestions for making Buchler's metaphysics even more consistent. Again, I first have to prepare some ground.

So far, I haven't taken any trouble to avoid a naïvely naturalist interpretation of Metapattern. The idea has been that objects (natural complexes) exist and that they can be modeled unproblematically by differentiating between intexts (ordinal integrities, or implexes) for corresponding contexts (orders). But I find that there's more to it.

I take my cue from the triadic model for semiosis. Charles S. Peirce (1839-1914) argued for three irreducible elements: object, sign, and interpretant. Now I would say that Peirce's work, parts of it, anyway, is especially relevant when discussing Buchler's metaphysics. For Buchler should also be acknowledged for having contributed to growing interest in the former's work; he did his dissertation on, as he called it, Peirce's empiricism,[1] and later published a collection of Peirce's philosophical writings.[14] Buchler's edited collection includes what he merged into a chapter titled 'Logic as semiotic: the theory of signs,' containing notes etcetera Peirce made from 1897 up to 1910.

In search of conceptual ground of information modeling, a good part of my own documented semiotic development is taken up with expanding the Peircean triad.[18] What triggered expansion, was the following sentence where Peirce gives a definition of sign:

> [It] is something which stands to somebody for something in some respect or capacity.[14:99]

I took it, and still do, as immediately clear what Peirce meant by "which stands" (sign), "to somebody" (interpretant), and "for something" (object). But what about "in some respect or capacity"? Looking for clues, it seems relevant that Peirce himself remarked that a sign

> stands for that object, not in all respects, but in reference to a sort of idea, which I have sometimes called the ground of the [sign].[14:99]

He continued that a sign is

> connected with three things, the ground, the object, and the interpretant.[14:99]

I found it, and still do, impossible to imagine how "ground" could be structurally added to the triad to form … a tetrad. How can such connections actually 'run'? In fact, I also find Buchler leaving structural ends open. It shows, for example, in a sentence which bears a strong resemblance to Peirce:

> A natural complex relates to an individual always in *some* respect; and whatever is produced, likewise, is produced in *some* perspective.[3:168]

What I believe helped me to move beyond Peirce's theory, and Buchler's for that matter, is my engineering attitude. It goes like this. How can it be made to work anyway, i.e. without the benefit of what Peirce did, or did not, constructively calculate, yet making sure that whatever structure I propose instead doesn't collapse? I decided to give up on the idea of a single ground. Why not fit each of the three original elements with its specific ground? It may be too much, but at least it should be enough as far as supporting the original triadic elements goes. As a result, the expanded structure is not constituted by four, but by six elements. Enter the hexad. Peirce's original three elements have become, say, *dimensions* with two elements each.

15. Semiotic ennead as metaphysics

But what about Metapattern? It clearly belongs to what, in the model for semiosis, consists of the sign dimension. Would I have to reduce Metapattern's three relative concepts/elements to two, in order to conform with the hexad? Again, the engineer in me now found it obvious to extend the other two dimensions, rather than risking weakening the one dimension that already really worked. My continued expansion fond expression with an ennead, i.e. a structure of nine irreducible elements.

Figure 5 illustrates the conceptual progression from Peircean triad, via hexad, to semiotic ennead. After the ennead's first version,[20:146] I changed the labels for some of its elements.[22; 23] The transition from hexad to ennead in figure 5 documents the changes: background interpretant has become motive, and foreground interpretant is now called concept.
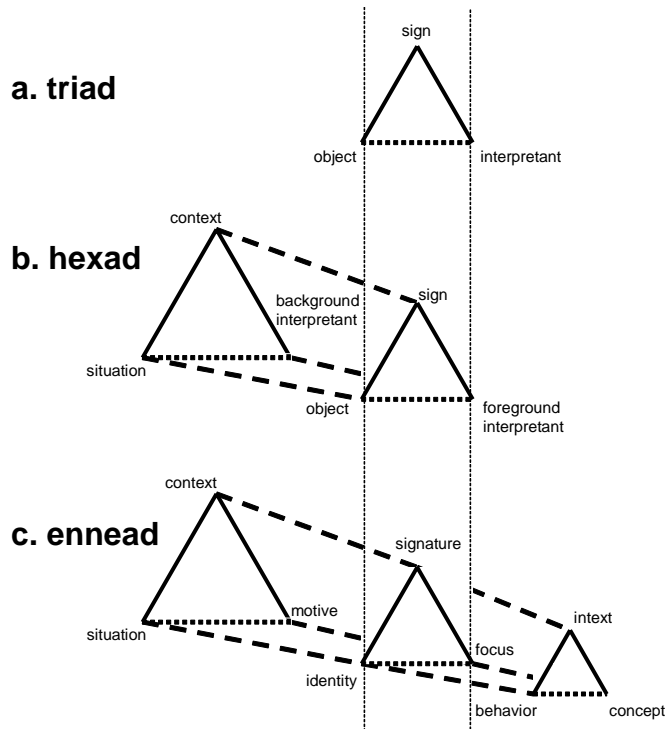
Figure 5: Expansion of semiosis model, from triad to ennead.

With concept … as one of its elements, the ennead incorporates conceptual reflexivity. However, ramifications of the semiotic ennead into cognitive science, neurobiology, and so on are beyond the scope of this article to discuss. My purpose here is to revisit Buchler's conceptual order from an enneadic perspective. I'll keep it to a brief tour, only, which I believe is already sufficient for suggesting how his concepts might fit (and what consequently remains lacking in his metaphysics from an enneadic analysis).

16. Still sufficient concepts left?

It should be remembered that Buchler only later emphasized the general nature of his metaphysics. As the title of the first book in what was to become his series on metaphysics indicates, he started with *Toward a General Theory of Human Judgment* in an

> attempt to lay a conceptual foundation for the understanding of such phenomena as symbolism and language, meaning and representation, communication and method.[2:vii]

It sounds very much like a project in semiotics. Does Buchler really make a departure when he

> conceive[s] of *every* product as a judgment[?][2:vii, my italics]

My own judgment is that Buchler tends to exaggerate differences on his way to overstretching generality. For example, I don't have any problem using the term behavior. Buchler, though, argues that

> evidently unsatisfactory are the terms "behavior" and "behaving," which are too narrow and excessively physiological or psychological in import.[2:4]

Doesn't judgment have precisely the association Buchler tries to avoid? My point is that Buchler, too, raises the issue of what I would immediately like to address as converting possibility into actuality. He calls

> [p]roception […] the composite, directed activity of the individual.[2:4]

Of course, assumptions can never be avoided. But then it should be as clear as possible which axiomatic commitments count. Buchler, as I understand him, assumes a. the individual and b. that individual as exhibiting a direction.

From

> [t]he interplay of the human individual's activities and dimensions, their unitary direction, constitutes a process which I shall call *proception*[2:4]

Buchler argues for a human individual to be considered as "proceiver." This leads to a concept of procept as

> anything that is a property *of* the individual, that happens *to* him, that affects or characterizes him in any way at all, so long as it relates to him *as a proceiver* (as an identifiable and cumulative individual)[.] [2:7-8]

I fully sympathize with the effort to limit a framework to necessary and sufficient concepts. Yet I feel that Buchler is cutting corners or, in an enneadic sense, dimensions.

Suppose I am taking shelter from the rain, I fall asleep in a remote cottage … and then its roof caves in. Indeed, something happens to me. I'm probably hurt badly, if nothing worse. I find it too far fetched, though, to consider such an accident as part of the direction I myself follow. Buchler is liberally mixing categories or, as I prefer as fundamental classification, cause types.[15:62]

Of course, a creaking sound could have woken me up. Then I could have thought of beams starting to break, suddenly realized some serious impending danger and fled the cottage. Indeed, a sign would then have caused, respectively contributed to "directed activity of the individual."

Or does Buchler actually avoid a metaphysical commitment in terms of the individual? When the roof hits and hurts me, it might be said that becoming is my "activity" but that it is "directed" not by me, but by the impact of roof remains. Does proception cover the whole range from an individual's other-directed to self-directed activity? I would readily agree that the experience of having a roof caving in on me most likely directs subsequent activities.

So, I really cannot appreciate any significant difference between Peirce and Buchler except for where they've plunged in. It is from an emphasis on the ultimate irreducibility of concepts how similarity between their conceptual structures/frameworks is recognized.

With Peirce, his account of pragmatics starts from the concept of sign. In semiosis, he argues, sign is irreducibly related to both object and interpretant. And interpretant is instrumental for conduct, i.e. producing further objects.

Instead, Buchler first considers procept as constituent of direction. Then, the individual turns, respectively is turned by "proceptive direction" (possibility) into "directed activity" (actuality). As a concept mediating procept and action, sign doesn't obtain a structural position. Buchler only makes general observations, such as:

> [A]nything whatever may function as a sign. Anything is subject to interpretation and is therefore a possible vehicle of communication.[3:30]

Please note Buchler referring to "interpretation." Structurally, I would say that Buchler finds it enough to argue, taking a different perspective, that a procept is actually a directed activity itself, and so on. But then, Peirce was well aware that a sign can always be treated as an object, too.

17. Cause types as discretionary levels

I fully realize, and appreciate, that Buchler is trying to move away from theories limiting human behaviour to what is under an individual's conscious, rational control. Indeed, a person breathing is a human activity, too. Rather than shifting to another common denominator, for analysis I favor keeping in mind what is considered as the individual in question.

Putting aside difficulties in establishing what complete may mean, then, for example breathing at the level of a complete human individual doesn't necessarily involve semiosis. It could be explained by cause type impulse. Or does it? Suppose it doesn't. At another level, however, say the respiratory system, it could involve sign as cause type. Please note that cause type is also associated with a closely related meaning of level, as in levels of reality where processes at a higher level emerge from lower levels.[10:38]

Distinguishing cause types can help clarify to what extent an individual exerts discretionary control over its direction. The cause types of direct force (physics) and impulse (cybernetics) in fact rule out whatever individual freedom which only starts with sign (social psychology).

Buchler presents his concept of procept, etcetera, as generally valid, while actually limiting his argument to what the cause type of sign behaviourally covers in human individuals. I propose to relocate Buchler's concept of procept, etcetera, in the semiotic ennead. His metaphysics is correspondingly strengthened. In the other direction, Metapattern and semiotic ennead gain additional support from being shown to encompass Buchler's metaphysics; it is a test of relevant rigor.

18. Preserving irreducibility

I've already explained how the semiotic ennead leaves Peirce's fundamental charge of irreducibility intact. If anything, I can only emphasize it. Several, say, suborders may nevertheless be recognized in the ennead. One such order is determined by Peirce's original triadic elements, functioning in the ennead as so-called dimensions. So, three such dimensions emerge. Along each dimension, three more finely grained elements are positioned.

Figure 6 elaborates upon part c of figure 5. So far, the only addition is making the ennead's dimensions (more) explicit. On the left, Peirce's original terminology reappears for the dimensional labels.
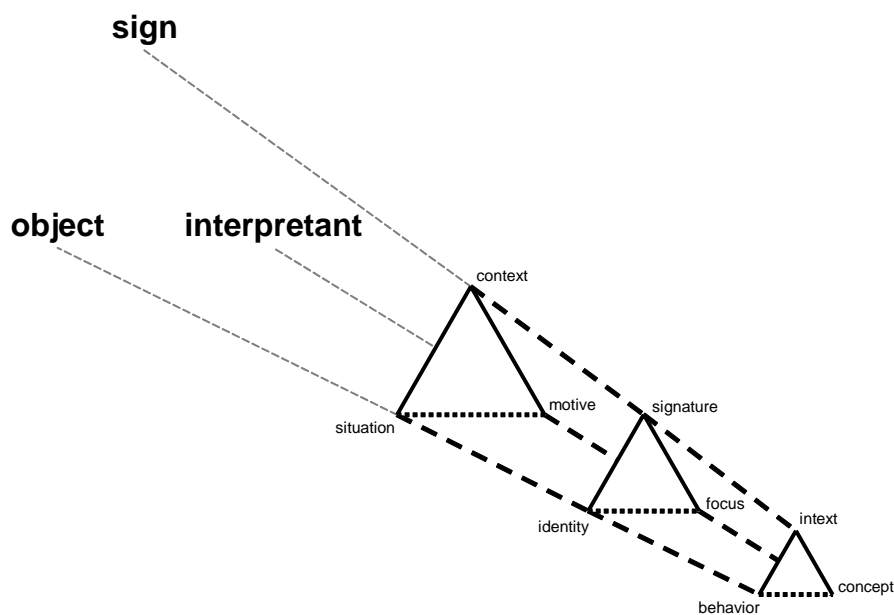
Figure 6: Enneadic elements in dimensional (sub)orders.

The concept of semiosis can be refined accordingly. Peirce envisioned semiosis as a procedural repetition, i.e. recursion. The interpretant resulting from one cycle becomes the sign for the next cycle in semiosis, and so on.

The enneadic expansion doesn't basically change his dynamic model. It's just that, rather than resulting in an interpretant-as-element, cycle *n* leads to a focused configuration of motive and concept along interpretant-as-dimension. And cycle *n+1* takes it, not as a sign-as-element, but as a signatured configuration of context and intext along sign-as-dimension.

I should add that Peirce doesn't specify how semiotic dynamics works, i.e. *how* occurs what essentially boils down to the movement from one focus to the next.

Buchler had the great insight of relative concepts. For example, from an ordinal integrity a particular trait could be selected, possible leading to different ordinal locations where the trait-as-ordinal-integrity might exist.

When I take an evolutionary look at cognition, what bothers me is that at any one time traversal should be limited to only such preordained relationships between signature occurrences. Wouldn't some measure of coincidence be helpful? Buchler already makes a relevant remark:

> On a particular level, […] randomness may itself be a technique or stratagem of method.[4:84]

Please note that relevance is constrained, that is, situational. So, again, what counts as the individual in question?

As I said, I don't pursue such questions pertaining to cognitive science here. I find the ground sufficiently prepared for positioning Buchler's primary concepts in an enneadic order and/or discussing them against the background of the semiotic ennead.

19. Procepts in two (sub)directions

The biggest problem with alignment lies, I find, with Buchler's attempt to reconcile realism and idealism through reduction, rather than, as Peirce did, by *adding* a third term making their relative nature explicit. Given my bias from the ennead's articulation, what I cannot fail to recognize is how Buchler draws on relativity. As it happens, the triad already suffices for this purpose. From

> [p]rocepts […] are natural complexes in-active-relation-to a proceiver[2:8]

it might be assumed that procepts should be placed along the ennead's object dimension. But then Buchler has already argued that

> idea-accepted-by-X is a natural complex characterizing an individual as proceiver.[2:7]

I'm sure that he means "idea" in the sense of constituting, as quoted earlier, "[p]roception [a]s the composite, directed activity of the individual." So, does procept after all belong to the interpretant, or subject, dimension?

It could help to consider that Buchler distinguishes between

> two fundamental and correlative dimensions in the proceptive direction: manipulation and assimilation.[2:17]

These are of course dimensions different from the ennead's dimensions. That way I prefer to say that "proceptive direction" has two subdirections. Anyway, my impression is that Buchler favors calling natural complexes procepts when dealing with assimilation. And in the opposite (sub)direction of manipulation he also recognizes procepts but calls them judgments (as a subset, too, of natural complexes).

20. Assimilation: procept as interpretant

Let me consider those subdirections separately, even though Buchler himself detracts from his earlier distinction by, quite rightly, I find, admitting to interference between assimilation and manipulation in the individual:

> In manipulating he is also assimilating; in assimilating, he is also manipulating[,][2:20]

I'll start with assimilation. Then, some natural complex, say, contacts an individual. Indeed,

> a procept is an object or other natural complex in effective relation […] to a proceiver.[2:25]

My idea is that "effective relation" depends on cause type. Please note that, as a label, cause type is only short-hand for cause-and-effect-relationship type. According to my own favorite classification, I suggest that the proceiver can be effected in three ways, that is, with the natural complex as a. direct force, b. impulse, and/or c. sign, all interacting with her or him in the subdirection of assimilation. Buchler somehow feels in need of a similar distinction:

> Through compulsion [the proceiver] responds to an uncontrollable situation; through convention he selects from alternatives.[2:58]

I would say that "compulsion" lumps direct force and impulse together, while "convention" involves individually differentiated motives, and therefore implies a sign-mediated "effective relation[.]"

For each of the three cause types that I've indicated, what is the procept that results from assimilation? When the natural complex's impact doesn't reach beyond direct force, what is in fact the assimilated procept? With action immediately equaling reaction, in the subdirection of so-called manipulation the nature of the procept is just as directly physical. I myself wouldn't call it "directed activity of the individual," though.

A natural complex may draw on the proceiver's energy supply. The assimilated procept is now met with by the individual as an impulse, causing an action that only modifies the impulse, or stimulus, in intensity and/or timing. The concept of sign is not required to explain such interaction. As for this cause type the impulse/stimulus unequivocally determines the response, still I wouldn't say that the individual directs its activity. Where's the discretionary power?

It changes again qualitatively with sign as cause type. The natural complex-as-sign is assimilated by an individual now engaging its motivational supply. I agree it makes sense to consider motivated action as, at least partly, directed by the individual. Its action in the subdirection of manipulation (also) stems from what assimilation has resulted in. Limiting myself for the moment to the subdirection of assimilation, I don't see any difference between proception and semiosis.

Below, a hierarchy implies that a higher type implies all lower types; thus, sign materially incorporates impulse, which in its turn materially incorporates direct force. Then, with the two lower cause types eliminated here for further consideration, I propose to let procept converge with interpretant. It follows for me that object and natural complex converge, too.

21. Assimilation in an enneadic order

I wouldn't have to go to all this trouble when Buchler hadn't also advanced in several respects beyond Peirce. Sticking to my orientation at the subdirection of what Buchler distinguished as assimilation, some close correspondences exist at the elementary level of the ennead. Above, the preliminary exploration already showed similarities between Buchler's metaphysics and Metapattern.

Once again I point out that fifteen years separate Buchler's respective first editions of *Toward a General Theory of Human Judgment* (1951) and *Metaphysics of Natural Complexes* (1966). My orientation in sections 9 to 13 has been toward the latter, whereas I've quoted mainly from the former in the later sections up to here. Indeed, the former publication does begin to suggest several correspondences:

> An object or situation is present to an individual, is part of his proceptive domain—and when it is we shall call it a procept—if it actually either modifies or reinforces his proceptive direction.[2:6-7]

On this particular statement, let me first of all comment that Buchler seems to assume assimilation, only. I find that it remains vague, though, what "present" means. Above, in the subdirection of assimilation I suggested equivalence between interpretant and procept. If so, how does "[a]n object or situation" become "present"? Peirce's answer: semiosis.

On the other hand, presence could be taken to mean that "[a]n object or situation" resides outside the individual. A procept, too, would then still *not* be, say, an internal part of the individual. Rather, it would be outside-object-as-related-to-individual. Then, what is the nature of such relationship?

Of course Buchler might oppose … the opposition between inside and outside. But I don't see how it can be avoided when reasoning from a commitment, however general he made it, to the individual proceiver. Anyway, a conclusive interpretation escapes me, which is precisely why I propose some alternative assumptions to arrive at a more consistent framework. So, I try to make explicit what subdirection of proception Buchler is actually dealing with at any point. For assimilation, I continue to consider procept equivalent with interpretation. And proception is semiosis, requiring some process between object/situation and procept.

As far as I can judge, Buchler took until *Metaphysics of Natural Complexes* to make the relative order of his key concepts somewhat productive. An early remark to the extent that

> [p]erspectives can include or comprehend other perspectives[2:115]

was at that stage left largely without exposition.

I'll come back to perspective later on. Here, I want to benefit from the precision the ennead allows for positioning what Buchler brought up calling "[a]n object or situation[.]" Emphasizing that I'm concentrating on the subdirection of assimilation, the question is how Buchler's loosely used terms "object" and "situation" might fit. From the ennead's pervasive relativity, too, I propose to translate

Buchler's "situation" to his concept, which he developed later, of "order." Then I would say that Buchler's "order" and the ennead's element of situation are similar. As his "object" seems to reflect the most general concept of natural complex, for assimilation it simply equals the ennead's object dimension.

What about the enneadic elements identity and behavior? My idea is that he latter, i.e. behavior, perfectly matches ordinal integrity, or implex. Then identity as the mediating element equals location.

As far as the ennead goes, there are two more dimensions to consider. Buchler abstracts from sign; there are no possibilities for projection. However, he does write about context. What Buchler means requires first understanding his subdivision of proceptive domain:

> Within the proceptive domain three perspectives may be distinguished. The *gross* proceptive domain comprises all that belongs to the individual's living make-up, the segment of nature within which he functions, the past that is actually alive for him, the sum of his suppositions, guiding principles, commitments, and peculiarities. The gross domain is the class of all his interrelated procepts. The *floating* proceptive domain represents the summed-up self or proceiver within a given situation. The limits of a given situation or enterprise are in the last analysis assignable by stipulation. Sometimes they may be defined by means of the formulation of a problem. But not every situation is a problematic situation. A situation for an individual is the concatenated set of interests, occupations, or problems[. …] An individual is in as many situations as there are viewpoints from which his proceptive direction can be described. The floating domain varies with each situation, or may be said to the situation compositely determined by the indefinite class of overlapping situations. Finally, the *imminent* proceptive domain comprises all that is present to—that is, available for—the proceiver at a given moment; it is the gross domain represented in minimal cross section. [... I]t is the world of the self in abstraction from the self's past and future. It is the directly available upshot of the whole of the individual's proception.[2:8-9]

The ennead makes several departures. Each dimension is "gross." And "imminent" is what focus etcetera determines as unambiguously motivated concept, contextual intext, and situational behaviour, respectively. So, what Buchler considers "floating" is actually imminent from the enneadic perspective. Then, what enneadically floats, along every dimension in correspondence, is the threesome situation-identity-behavior, etcetera.

There is much more to be argued about Buchler's subdivision. Here I especially want to point out that Buchler doesn't apply any formal distinction between context and situation, let alone motive. It seems he even assumes their equivalence:

> The distinction is […] primarily in contextual or situational terms. The gross domain is the ramified order within which any situation of the individual is discernible; the floating domain comprehends any such situation; and the imminent domain comprehends the minimal context of any situation—or better, *any* minimal context of any situation.[2:24]

What I still find lacking in Buchler's framework is what is assimilated as a subsequent ground, i.e. in the subdirection of manipulation, for "directed activity." I maintain that Peirce's original triadic

elements, but now reappearing as the ennead's dimensions, are indispensable for structural overview. Alongside formally differentiated concepts of context and situation, therefore the concept of what I've chosen to call motive is included in the semiotic ennead.

In figure 7, I've projected several of Buchler's concepts onto the ennead. I don't pretend accuracy. In fact, I felt forced to take some liberties interpreting Buchler's framework, making assumptions accordingly for improving consistency.
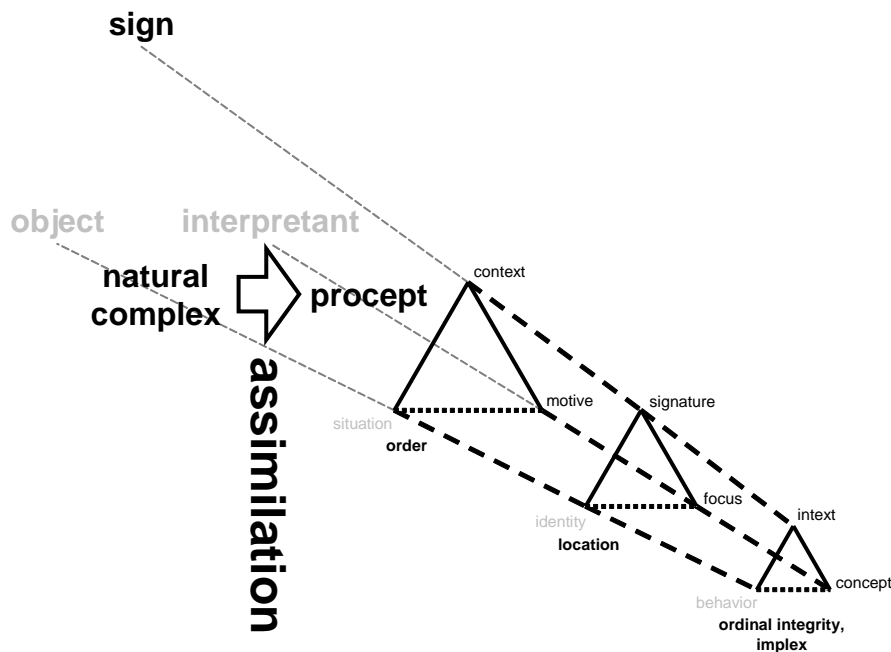

Figure 7: Buchler's assimilation enneadically assimilated.

22. A lack of manipulation

The obvious step now seems to follow Buchler in his opposing subdirection, that of manipulation. Buchler unifies manipulated, or "directed activity" as he argues that

> [b]y a product I understand anything at all (any instance of making, doing, or saying) that issues from human life[.][2:vii]

Let me return to how Buchler irreducibly linked natural complex to an individual. Whatever is discriminatingly present to an individual, he calls a procept. I've added the interpretation that Buchler was mainly explaining assimilation with such a definition of procept. And wherever I find Buchler mentioning product, or judgment, I suppose he's actually explaining his concept of manipulation. Then I would say that a judgment is a natural complex that is discriminatingly produced by an individual:

> Man is unavoidably a taker of positions. And the way in which his positions are rendered discoverable is through his products, that is, his acts, his contrivances, and his verbal combinations.[3:10]

What I would say that really happens is all about permutations. For example, one "proceiver" may not have wanted to communicate at all, but another "proceiver" may nonetheless take the former's "judgment" as a sign. Or, a "proceiver" may offer a judgment as sign, only to be ignored. It all means that an exhaustive analysis of interaction across cause types actually requires the dia-enneadic framework which I've outlined elsewhere.[22; 27]

Here, figure 8 extends figure 7. Not much has been added, for Buchler doesn't provide any details on manipulation, as he does on assimilation. He displays an assimilation bias:

> Every product is a judgment precisely because it offers itself, as product, for interpretation and appraisal.[2:52]

So, it turns out that I recognize no more opportunities for projection at the elementary level of the ennead. Or?

23. The focusing of perspective is the perspective of focusing

The title of this section is a contragram.[11] For there is one additional concept with Buchler, though, that deserves an emphasis from an enneadic order:

> A perspective is the order by which a given situation may be defined.[2:130]

Buchler is of course trying to compress concepts along a single dimension. The three-dimensional Peircean space of the ennead suggests how perspective operates dynamically. From a specific focus, a corresponding situated identity is implied, hence defines "a perspective […] a given situation[.]" Based on this argument, in figure 8 I've projected "perspective" at the ennead's element of focus.
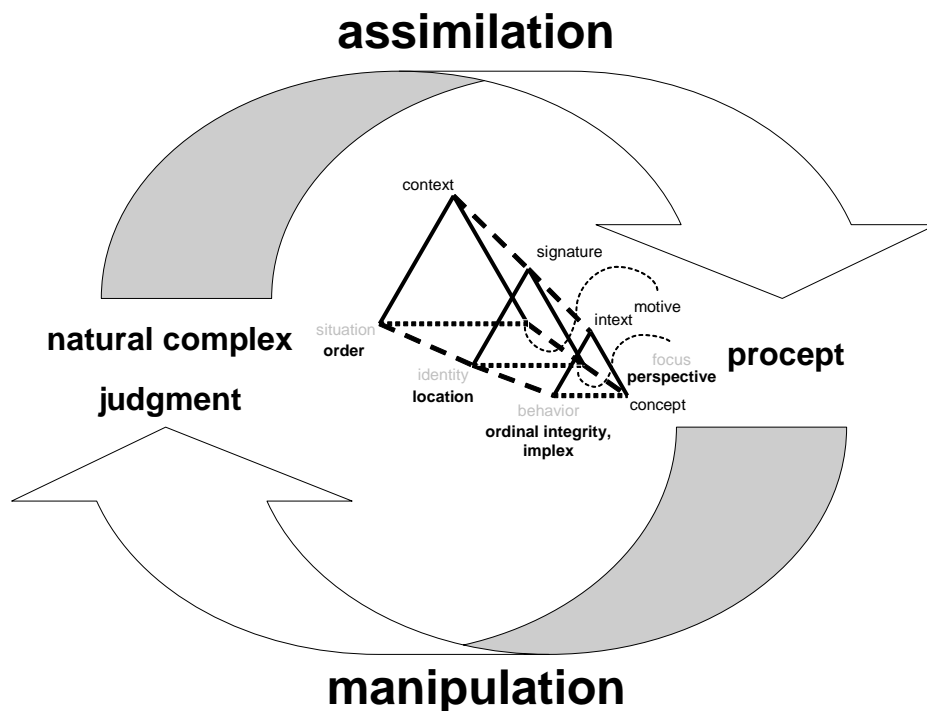
Figure 8: Encompassing enneadic perspective at ordinal naturalism.

24. Buchler's relevance for an infrastructural order in information management

Coming to the end of this article, it might be argued that placing natural complex in an enneadic order at most carries some theoretical interest. If so, I am to blame taking risks. For such a conclusion misses the point I want to make. I did want to come full circle, because I believe that only such a completed discussion of Buchler's metaphysics does proper justice to his work's current relevance.

It surely is impossible already for some time now to deny that digital information technology establishes (inter)connectivity. When physical connections are consolidated into an infrastructure which is used for sign exchange, as happens for everyone to notice, the qualitatively new question of coordinating information variety arises. In fact, infrastructure must be augmented to include semantic order, that is, even what infrastructure involves now changes accordingly.

Then it must be recognized that inherent variety can never, not anymore at the exploding scale of boundless connectivity, be simply standardized away. One meaning doesn't fit all, on the contrary. Rather, it should be recognized that relevant interpretational differences represent, even supply, new opportunities.

In a civil society, technology-driven similarities we're familiar with for separate information systems, would only halt development. The dynamic balance for which directional differences are essential, would be upset social development.

I've sketched Metapattern as a method for technology-driven empowerment of constructive differences, while actually enabling to better benefit from similarities, too. Needless duplication may be eliminated, short-circuiting at its origin the domino-effect of run-away cost of information management. Metapattern can help give positive direction, first of all by making the need for a paradigm shift more readily recognizable.

Buchler's metaphysics of natural complexes proceeds Metapattern and the semiotic ennead by several decades. It already clearly points at the need to appreciate requisite variety. I've offered its discussion here to promote the infrastructural turn in information management. My argument is that a civil society simply cannot exist and thus develop in the future without an equally dynamic civil informational infrastructure as a constituting aspect.

By corroborating Metapattern, Buchler's metaphysics of natural complexes helps with understanding essential requirements. What he envisioned for his metaphysics essentially corresponds to the scale that the civil informational infrastructure should practically address.

My idea is that the practical value of his metaphysical theory has never been greater. For Buchler is not at all imagining complexity. He didn't write some far-off science fiction but was realistically trying to come to some terms with variety. And today, those terms eminently serve promoting "directed activity" toward practical solutions in information management. Buchler's work supports

the realization that such necessary solutions are far from elusive. As seen from Metapattern's perspective, in turn grounded by the semiotic ennead, Buchler's framework is no longer "floating," but can now be converted for "immiment" application.

In order to sketch the challenge of managing variety, throughout his work Buchler has produced relevant statements from which I've selected several more for an additional emphasis on his relevance:

[T]he notion of unity goes hand in hand with the notions of plurality and diversity.[2:10]

[A] procept, by definition, is [an] object as uniquely modified by relation to a given individual.[2:11]

The relational status of procepts makes it impossible to conceive of them as entitative lumps geometrically divisible.[2:14]

[M]ultiplicity follows from the relative alterability of the floating domain and the relative constancy of the gross domain.[2:40]

Communication is a circular process. It feeds on procepts (products of nature and of man) and breeds products which enhance the number and variety of its future procepts.[2:58]

We may appreciate the likeness without overlooking the difference.[2:111]

[V]ariability of meaning depends upon the variability of communicative situations and needs.[2:137]

For obscurity, ambiguity, or misunderstanding to arise means that we have lost sight of the perspective to which a communicative situation commits us.[2:137]

In this sense a view which is thus more general is at the same time more precise, and would not confound a generic characteristic of meaning with one of its species.[2:138]

The usual malpractice […] is not that they tend to overlook the importance of its parts but that they tend to overlook the possibly more important whole of which it is a part.[3:20]

[S]ituational and communicative contexts hold the answer to the study of meanings.[3:48]

The concept of natural complex permits the identification of all discriminanda generically, without prejudicing the pursuit and the analysis of differences, of further similarities within the differences, or further differences within these similarities.[5:2]

The integrity of a complex belongs to it not in spite of but because of its multiplicity and relatedness. […] All natural complexes are relational[. …] There is no end to the relational "chain" of a complex; and there is no end to the explorability of a complex, whether in respect of its relational traits or any other. A relation as such is a complex, analyzable as all are.[5:24]

No distinction […] is dismissed.[5:32]

The natural parity of all complexes, their ontological integrity, is what reveals all differences and makes it possible to ascertain them. The principle of parity obliges us to receive and accept all discriminanda.[5:33]

An order implies relations among complexes. A given complex possesses its status in virtue of its sphere of relations, and it possesses a different status in virtue of a different sphere of relations, a different ordinal location.[5:56-57]

Uniqueness […] is part of the integrity of every complex.[5:63]

Relations are the ramifications of a complex.[5:104]

> [T]he concept of natural complex expresses the very basis of the interdependence of unity and plurality.[8:252]
>
> There is no privileged order of being, no inherently primary order. Another way of saying this is: any order may be primary in a given respect.[6:90]
>
> To refer to […] a natural complex […] suggests […] potential diversity and manyness within the unity of reference.[6:103-104]
>
> In principle, distinctions can be multiplied endlessly; in practice, it is the ways in which they are utilized, the purposes which they subserve that are important. […] A set of distinctions is a means […] to the completion of a specific project which provoked and guided the distinctions in the first place and prevented them from being random exercises.[6:164]

There's not much that I could add myself, really, for promoting awareness. As diffusion of digital technology proceeds in the direction of fast increasing density of connectivity, Buchler's remarks on variety have equally fast become representative of requirements for engineering the civil informational infrastructure, too. His metaphysics should serve to inspire further developments. Metapattern of natural complexes supplies a comprehensive infrastructural perspective.

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