Short communication

Thomas Fröhlich, MD, PhD, FRSM

Some thoughts on meaningful systems

An empty space

An empty space has no meaning. If filled with something, it still is meaningless, unless someone enters it. Then, the subsequent interaction may have the form of pure registration, or any kind of further use. Be it by simple registration or other forms of acting in it, up from then, the room and the entering person generate meaning via acting on each other. In case of registration, the room's activity consists of being and unintentionally presenting itself. Anyway, the interaction's meaning emerges, independent of any additional intention. It just comes by itself, as the interaction's semantic content, as its semantic inside. In the following chapters, the general structure of interactional content-generation is discussed. The logic of this structure is simple in so far as it just consists of a mental inward-bending of lines imagined as straight lines before. The prehension-like bending move, via circling around the addressed entity creates a logical inside distinct just by its semantic geometry. A cyclic or orbital semantic geometry in turn creates a logical, semantic center. The now semantically centered geometry distinguishes the inside from its outside in terms of meaning, since the centralizing procedure has exclusively been applied to the inside. The outside remains in either a lacking or a neutral, Euclidian geometry. So, a semantic inside is installed prior to and independent from further specification, just by applying a specific geometry. This, in short enables systems to enact and contain meaning.

An appropriate formal approach

Deciphering a system as a semantic inside needs an appropriate formal approach. In that, reasoning may use spatial terms, yet to formally establish the possibility of semantic singularity, the principal exchangeability of places in a Euclidian space approach forbids primordial individuality and instead renders it to a voluntary, arbitrary, non-substantiated claim. Taking time as a second parameter into account does not help, either, since general time applies to anything, not allowing for a primordial separation and distinction, either. So, using the conventional form in which time and space are thought will not bring us further in providing a general theory of the non-general. This dilemma's solution lays in a sideward move, splitting temporality and spatiality in two logical differentiated forms: a potential and an empiric one, respectively. This follows the old tradition of differentiating a subsumed potency to act in an individually detectable form, and the realization of this potency, which necessarily has the form of a realizing action, that is, a change of states, a process instead of fixed single or combined states. The fact that this differentiation has a long history does not proof any validity, yet it might have been in use for some reason – we will see.

In a theoretically unchallenged manner, time and space unfold as a primordial time-space unit when becoming realized, Yet, since they are understood as unfolding from a logically assumed and mentally construed involuted type of "presence before time" requires an additional concept of time and space. This potential time and potential space type of sleeping dynamic nicely fits to the concept of an as-if, or not-yet presence, a pseudo-presence that principally differs from the conventionally alleged one that is realized and realistic, and to all "real

life" measures and categories apply. Diving in the submersed world of potentiality, such scales and categories applied from the outside simply do not find their explicitly realized, evolved, segmented and fragmented counterpart.

As well, the terms whole and element do not apply, since the form of a potency's wholeness refers to a seed's still undifferentiated pseudo-homogeneity, and not to an assembly of distinct elements ripened into individualized full dynamic differentiation. Combined, we are left in some kind of destabilizing confusion when starting to assume the pseudo-existence of "real", effective potency, not tamed by mapping it in the real world terms of frequency concerned with observed, factual, distinct realizations and sets of them.

Nevertheless, there is a simple way of plotting it. To imagine general, realized time as a constant forward move, the "stream of time" is easy. The corresponding concept of realized spatiality in the form of a three-dimensional space remains untouched. What is added, then, is a term for supposed non-dimensional potentiality, referring to a hypostasized outcome-neutral black box, a treasury chest, or a Pandora's box, depending on what is assumed to happen next. It is from this hypostasized pseudo-corpuscular, chest-like, distinct an individual source that actional, trans-individual interactivity is believed to emerge. So, the germ of individuality is laid on the potentiality level, to then, if flourishing in realization be maintained, iterated and renewed. This constant and consequential relation is iterated in every re-emergence, and by consistent, always refreshed reference to the germ's formative scaffolding power and chaperoning, individualizing potency.

The figure in which this re-emergence and recursive re-reference happen compares to a prolonged focusing on a formative source. This source acts as a presence-structuring center, and stretched over time it corresponds to a semantic axis, placed in the middle of a spiraling move around it. Obviously, this spiral motion is the form in which the emerging topic-centered trans-individual action, as an individualized, specified interaction is realized.

So, we are left with an easy-to-imagine picture of a central rod and an Aesculapian spiral winding around it. Before going into the geometrical and pseudo-geometrical details of this visualization, we may consider that what we are talking about is the treasury box' realized content. That is, the realization contains something, it is and performs the realized content-filled pseudo-interior. Its grasp to the future hence is more than a simple prolongation of a content-free thin line, it has the form of a bowl, or petals prehending future in s pre-structuring, preference and avoidance-realizing way. The same holds true in the spiral's opposite direction: this also is not a thin line pointing from the past into an empty presence. It has a grasping, soil-enclosing, matrix-surrounding form, instead, like a widespread assembly of roots covering an enclosed volume of fertile soil, converging in the realized tree's stem, as a content-preserving inside.

Now, back to how to map a general form of formatting the non-general, individual. First, we draw the central rod, knowing that is not actually continuous but composed and made of momentary, punctual treasury chests, individually pulled forward in the stream of time - like in old times, when craftsmen walking on the river's coast moved a ship by ropes. Next, we draw a spiral centered in the above central axis. We simply suppose a constant radius and a constant speed, just as we tacitly assumed the central axis to progress in constant speed. The easiest way to derive a corresponding differential equation is using complex numbers. Then, we arbitrarily change the meaning of the variable used into their opposite: the previously one-dimensional time

variable now becomes the a funny, because still one-dimensional, or better to say pseudo-one-dimensional space variable, and the previous variables characterizing the three dimensions of space now turn into variables of an as well three-dimensional time. Then, the pseudo-one-dimensional space variable is assumed to refer to the potential germ status of not yet explicated spacetime, whereas the three-dimensional time now generates realized interiority, via this formal interior's potency to provide an included content's form, as its vessel.

Being the founding principle of realized both individual and individuality-transcending interactivity, the spiraling move of the realization has two or more mutually engaged components: two or more activities engaged in mutually acknowledging, considering, implementing, unit-generating interaction. The corresponding internally homogenized unit is the interaction's inherent integrity's one. So, the spiral resembles the double-helix of DNA, but with a potentiality rod implemented as its logical, germ- and potential-like semantic, thematic central axis.

The individualized content, then, is the expression of the one partnering agency and the impression it enacts in the other, and vice versa. Formal features contributing to further individualization in contrast to the general stream of time (which is tacitly contained in the central axis' progress) may concern the "velocity" of the spiraling rotation and the implementation of further participants in the spiraling move.

Note, that using interactional activity as the approach's founding principle means that realized presence is construed and understood as the simultaneity of immanence and transcendence, of an individualizing and contextualizing processing, of being while being-in-the-world, of interiority conjunct with as well categorical exteriority, of generic, corpuscular discreteness and realized, "waveform" homogenizing convergence. It also allows for the imagination of distinctness as only relevant in the form of a potential, whereas the absoluteness und unrelatedness of transiently fixed and preserved singled-out potentiality is suspended in primordial outreaching transcendence and relational embeddedness as soon as the discrete potential has been realized.

The principal form in which non-principal, but individual content is generated then is achieved by transient spiral-form, semantic axis centered deviation from the still valid straightforward move of general time, with the spiral consisting of partnering agencies engaged in mutual understanding, as the generation of a content-as-semantic-inside-qualifying interaction. Contained in the germ's realized flourishing is the generation of space in its primordially relational, semantic volume-individualizing form, distinguished into emerging meaning-generating insides contextualized in as well temporarily meaningful outsides right from begin.

In this semantic systems approach, systematic content features applying to whatever is identifiable within a system are seen as aspects of the participants' systematizing potential-sourced agency that are shared by all engaged in systematizing, systems- generating systematized interaction.

Mutually interpreted behavior in terms of the proposed model

Interpreting behaving as an activity and interpreting this activity as not occurring in a vacuum but in a context to act on and interact with, we may put it in formal terms as applied in the previously outlined approach. Then, it impresses us as observers as a relational co-activity in parallel to and interacting with as well dynamic "outside" processing. Being contextualized right from begin, its "inner semantic spine", thematic axis and

concretized meaning emerge as the coherence-generating center of the interaction. To observe an interaction is an interaction, too, so it enacts a co-spiraling around the observed and own interaction's multi-actional, composed thematic axis. Also, the distant observer, in other words, factually participates in the interaction by imposing its meaning-allocating interpretation into her or his bodily and mentally accompanying co-acting. The direct participants' behavior, if identifiable as enduring and contextually consistent builds on the bodily and mental interpretation of the partner's moves and expressed or tentatively supposed thoughts and intentions. So, the interaction itself contains the products of mutual meaning making, it is filled with this also, and supposed to be consistently sourced by persisting discrete potentials allowing for a coherently systematized, structured form of co-acting.

The behavior, in other words, creates a transient meaning-filled inside which is a priory outside-embedded, autonomous and relational, individual and trans-individual, absolute and relative, immanent and transcendent. Taking it into account from a distant observer's point of view creates an individualized, perspective and theme-focusing, momentary meaning-generating interaction, also. Features shared by multiple participating agencies simultaneously may be understood as equipped with a semantic axis of their own, creating a contributing individually sourced participant co-spiraling with the complete setting, or system.

In this approach, observation is understood as a form of subjective participation, and objectivation is understood as identity-attribution by assuming a relational-coherence-guaranteeing generative basis, effective in terms of features shared by and observable to not only a single participant but to a trans-individual system of participants.

Embedded subjectivity as a primordially relational form of identity is seen as a priori interactional. Identification of distinct contributing sources, in themselves being trans-temporal, trans-spatial, time- and spaceless leads to pseudo-corpuscular objects, as potencies and capabilities that must be logically carefully distinguished from realized, primordially contextualized interactive agencies. Elements of a system hence are made of these potentials together with their contextualizing realizations, and not of these realizations alone.

Application on science and humanities

Being semantic right from scratch, the proposed approach applies to all forms of "real", that is distinctively individualizable interactions. To be actual interactions differing from randomly assembled sole actions, the co-acting partner's addressable characteristics must mutually be taken into account. They must be seen, semantically allocated, interpretively processed and eventually systematically incorporated in the present and future own share of and contribution to the interaction. This mutual consideration concerns momentary, individual features as well as such features shared by, presented and provided in all interactional circumstances, like spatiality and temporality as such, and universal features of the latter. The non-systematic, initially meaningless aspects result from the random character of encounters of potential agencies, with random coming-together then allowing for subsequent formation of structured interaction. In mathematics, the engaged algebraic or numerical agencies interact in the highest possible coherent and consistent form. So, mathematics provides the ideal of systematization, allowing entry only for those participants conform with its systematizing rules. Chance is not excluded but described in terms of non-arbitrary, non-random participants. The materiality of the participants is reduced to pure existence in a systematically describable form, and mathematics in consequence

can be applied on all forms of materiality, including immaterial entities. Physics, in turn systematically hypostasizes materiality according to its trans-individual, trans-contextual, not primordially presence- and context-exposed features. These can be identified as systematizing and systematic contributions of agencies in the form of objectified, discretized potentials. The mutually interpreting activity of interaction participants is not much focused in physics. In biology, as far as being concerned with physics and chemistry of "living" systems, this is different, starting with interpretation and misinterpretations in receptor, enzyme and membrane activities, up to the level of an integral plant's, or animal's behavior. To give an example, biological membranes serve as additional, inside-as-meaning-creating interpretive instances, as do further complexed biological forms. In humanities, mutual interpretation of others' behavior, gestures, hypostasized thoughts, feelings and intentions contribute to what may be described as "everyday phenomenology" (Lit Derek Mitchell). This extends to a reader's interpretation of literature, a viewer's interpretation of pieces of art, theatre, movies, and a listener's interpretation of systematical sounds like birds' songs, rain's rhythmic texture, spoken language and music. In all these interpretive interactions, systems of meaning emerge, are dealt with, transiently accomplished and eventually left. As soon as the interactions stop, the system decomposes and exhales its individual life as body and soul.

In all these latter instances, also the terms world and worlds, respectively, apply to different systems. But the merger of worlds can better be described an understood in a primordially process-oriented approach, so the picture of co-spiraling in terms of not fixed but Nietzschean "dancing stars" is equivalent or superior. The chaos Nietzsche is talking about resides hidden in the generative capacity, which is able to give birth to both the mobilization, dynamization in the form of structured interaction, and to destructive, chaotic, non-structured, not contextualized single action. In his view, the Dionysian and the Apollonian aspects together allow for the emergence of distinguished, that is internally systematized form, as an interactional agency. In this latter example, I as an author interpret a philosophical text, which, by reading and interacting with it transforms into an interactive agency. The resulting interaction generates an interaction-specific meaning which, realizing and implementing my personal perspective on the text must not be valid to anyone. So, referring to its general validity it is to be put into parentheses, as concerning a perspectival interaction. That is the way individuality is lived in a systematic form, and as described above.

A word on causality

By introducing also a potential form of agency, serving as the semantic spine of structured, systematized forms of interaction, disposition, enabling capacities and circumstantial potency come into play. As well, outcomes are not fixed and definitively determined but made more probable than others, which may be as well contained in the basket of possibilities or simply emerge from different potentials. The outcomes are single interactional realizations. Compared referring to identical enabling sources, they may be stratified in the form of probability distributions or by tree-like Cayley graphs in graph theory. In all instances, realizations emerging from potentials are not simply "caused" by them. Their individual manifestation is exposed to growth-conditioning influences emerging from other sources' realizations. In experiments, stepwise decontextualization leads to deprived contextuality and a corresponding narrowing of conditioning co-acting. In the end, conditioning agency is singled out as emerging from only one or a finite number of instances, allowing to construe a single- or double-, triple- et cetera-stranded causal strain. The term "complex" only veils this

effectively oligo-causative picture, without challenging its reductive basis and instead introducing the potentiality principle.

The contact of presence to its future expose options-providing sources to an enabling or hindering counterpart. The eventual outcome is not the prolongation of a causative line but results from a corresponding contextualizing interaction. The same holds true concerning the past. Again, what is picked up from a fertile soil's manifold to get channeled in the realizing interaction is the consequence of an interaction, and not a simple continuation of a line. In all circumstances, formative or dissipating chance comes into play as a relevant co-agency.

Practical consequences

The proposed approach was developed in construing an advanced model of biopsychosocial interaction, to be applied in person-centered care and healthcare. Before, in an interdisciplinary effort supported and hosted by the late chair of the Heidelberg University's philosophy faculty, the Gadamer follower and Whitehead expert Reiner Wiehl, we tried to formalize the above model in terms of asthma-psyche-interactions, described in mathematical terms. A recent application concerns a detailed understanding of patient-doctor encounters in an emergency practice. Furthermore, the model is compared to the unfinished temporality approach of the late ingenious American Hungarian Germanist Andrew Jaszi. Biological system theory following the footsteps of Jakob von Uexküll as well as psychosomatic approaches developed in Heidelberg, like the ones of Victor von Weizsäcker and Wilhelm Kütemeyer serve as further applications.

Simple instruction guide

To use the proposed model, turn whatever you interact with into a logical, content-generating spiral. The discrete, concrete objects as well as addressed, not directly tangible and discernible feelings and thoughts all are converted into two combined components: the one being you and the object or feeling as discrete sources ready to come into life, and the other the object-subject-interaction's coming-into-life. The latter forms the content-generating spiral, which emerges from the sources cycling around them. Depending on the applied resolution, in a fractal fashion, there are small spirals within the large spiral, and the large spiral may form part of even larger spirals, like solar systems within larger solar systems, or galaxies. Each spiral's central source, in being put forward in time, forms the enacted and addressed interaction's central axis. Via spiraling around the central axis of a larger spiral, it takes part in the overall system-building. The axes do not directly relate to each other; they are not embedded in a spatial continuity but connected via the spirals' intermediating interactional dynamic. Combined, potential-sourced spiraling is the form in which content is created in general.

Conclusion

The principal structure of inside-as-meaning-generating interactive and interpretive agency is derived. It allows to identify spiraling islands of meaning floating in the general stream of time. The inward-bent form as

well as its principally double- or multiple-stranded interactively spiraling character allows the agencies' timing to generate a fragile, transient semantic inside, created, individualized and qualified by a structure-providing, sourcing capacity. The latter lives an alternate form of presence, the not-yet-but-possibly-soon pseudo-presence of potentiality. Considering original contextuality, relative identity and mutually informed co-processing, the proposed inside-as-meaning-generating form applies to detailed interaction-considering aspects of science and humanities. Interpretive activity is ascribed to all forms of interaction successfully leading to mutually adapted co-processing, with each interaction's internal, convergence-resulting homogeneity serving as the stem-cell of meaning-processing system generation. In being relational right from start, the model's approach accords with non-experimental real-life situations, characterized by widespread interaction and systems-destroying, altering or generating chance. This is because interiority and identity of addressed systems are not hypostasized as being absolute, but noticed being gradual. Their principal relatedness cannot be overcome, and their non-exclusive but selectively and gradually open identity remains embedded in non-systematic chance and further system contacts. The abstract, formal character of the suggested model allows for its widespread applicability.

Appendix: Differential equations of the modeled spiraling structure

Conventional Form Visualization:

- 3D Helix: Plot $\mathbf{r}(t) = (r \cos(\omega t), r \sin(\omega t), ct)$ with $r = 1 \, \text{m}$, $\omega = 2 \, \text{rad/s}$, $c = 0.5 \, \text{m/s}$, $t \in [0, 10] \, \text{s}$. The result is a helix in 3D space, winding around the (z)-axis with radius 1 meter and pitch $\pi \, \text{m}$.
- 2D Complex Plane: Plot $\zeta(t) = r e^{i \omega t}$, showing a circle of radius 1 meter in the ((x, y)) -plane.
- Appearance: A corkscrew-like curve in 3D, with a circular projection in the ((x, y))-plane.

Inverted Form Visualization:

- 3D Helix: Plot the same equations, but interpret (x, y, z) as temporal coordinates (in seconds) and (t) as a spatial parameter (in meters). Use $r = 1 \, \text{s}$, $\omega = 2 \, \text{rad/m}$, $c = 0.5 \, \text{s/m}$, $t \in [0, 10] \, \text{m}$. The helix represents a trajectory in a temporal manifold, with ((x, y)) as the simultaneity plane and (z) as linear time.
- 2D Complex Plane: Plot $\zeta(t) = r e^{i \omega t}$, showing a circle of radius 1 second in the temporal simultaneity plane.
- Appearance: Identical in form to the conventional helix, but axes are labeled in seconds, and the parameter (t) is in meters. The helix represents a "temporal spiral," with cyclic patterns in the ((x, y))-plane and linear progression along (z).

Feasibility: Both visualizations are feasible using standard plotting tools. The conventional form is intuitive as a spatial helix. The inverted form is abstract but mathematically identical, requiring careful interpretation of ((x, y, z)) as temporal coordinates and (t) as spatial. The inverted visualization captures the "temporal spiral" concept, combining cyclic simultaneity and linear time progression.