



Empiric Systems Theory – An Experimental Approach

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Funding: No specific funding was received for this work.

Potential competing interests: No potential competing interests to declare.

Abstract

Based on an overarching science- and humanities approach to biopsychosocial interaction, such as that desired in care, healthcare, and social care, an appropriate systems theory has been introduced. Taking interactions, not single processes, as its smallest element, it allows one to focus on the meaningful content of structured interactions, as related to their present context. The latter contains its constituting quantitative and qualitative, locally, and situationally meaning-generating aspects, in the form of the interaction partners' role-specific aspectual qualities. Engaged in specifying systematised interaction, contributing partners are seen as providing, recruiting, and implementing information, acting as individual agencies in their relational matrix to possibly converge to systematically combined co-acting units, as systems made of systems. The systematised approach gives a more empiric view of mandatorily interacting systems and their content-as-meaning-generating potency.

Empiric systems theory can be applied wherever primordially embedded agencies' processing occurs and extended decontextualization fails or is inappropriate. Its advantage is its consideration of relational structure and corresponding perspectivity right from the beginning, which enables one to conceptualise and understand systems as containers and producers of perspectival meaning. Accordingly, the theory is a semantic systems theory as well.

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Keywords: systems theory, just culture, person-centeredness.

Individuality-based perspectivity

To combine individuality-based perspectivity and trans-individual comparability, the theory differentiates between underlying providers of systematised individual agency, system-embedded realisations such as sources, and coordinated interactions that these realised processes engage in. Being bidirectionally sourced in a systematising, mutually corresponding way, these interactions become a systematised character as well, to thus contribute to establishing, continuing, and expanding a system. This system, in turn, consisting of interactions, is itself a potential interaction partner; so, growth and extended coordination are a system's immanent capacities grace to its principal connection-oriented structure.

The inner dialogue and external contacting of the system can then be described regarding the individuality of its constituents, allowing to combine a subject- with a generalisation-oriented view that considers content and its addressable, communicable aspects. This content, in the form of its communicable aspects, is called information in our approach. So, the dialogic generation, provision, acceptance, and interpretive implementation of information are at the core of the proposed theory. It considers relational structure and corresponding perspectivity right from the beginning, which enables it to conceptualise and understand systems as containers and producers of perspectival meaning. Accordingly, the theory may be called semantic systems theory, also. It can be applied wherever an extended decontextualization fails or is inappropriate for primordially embedded agencies' processing.

A system at work?

Studying interactions that turn out to share repeatable features may lead to the assumption that a system is at work. This assumption needs to get proven again and again, but it provides the best working hypothesis momentarily at hand. The

research done on this supposed systematically converging and flourishing unit performs in the form of such a coherent, memorising and assuming, anticipating dynamic itself. It accompanies, as a system, the supposed partner system. By this, it constitutes a non-neutral perspective, and if its assumptions preliminarily turn out to be right, both systems may be seen as interacting under the guidance of provided aspects and their interpretive use by consideration and eventual implementation into the further experimental, always dynamic progress.

The stress on the probatory, investigative, questioning, and experimenting quality of interaction, as well as its hesitation, or better lack of will, to accept interactions and their partners as fixed combinations of insensitive objects void of inherent agency, allows to better capture agency-based variability, relational versatility, situationally role-bound speciality of partners supposed to join in systematised interaction. It is not a simple mapping, made of replacing static figures with self-made ones. Instead, this change of forms, as a transformation, refers to hypostasised sources of agency, of which the accessible and applied forms are momentary realisations. The questioning goes in the direction of both the underpinned, hypostasised potentials, seen as guaranteeing its realised manifestations' systematic quality, and these observable, interpretable realisations themselves. This way, the approach is both experimental and time-conscious, in that one of its pivotal features is seen as a potency, ready to unfold in time, which may be understood as having been encapsulated as a silent capacity until becoming realised in real time. This realised time and timing is understood as specifically action- and interaction-filled, as is the specific-filled semantic space, as we call it.

The structure of the addressed interaction emerges from these agencies' dynamic sources, as a quality structure, established, and qualified from both partners' contacting sides. So, this hypostasised structure contains the enacted perspectives and realised mutual interpretations right from the beginning, as it does by concerning the specific quality of shaping and structuring a distinct period in time and a specified locality in space. Any observed interaction concerns a systematically filled and interactively resonating, time- and space-producing volume contacting other such structure-filled volumes, and is further embedded in the far, undifferentiated outskirts of empty, and neutral time and space. Only the latter are accessible to neutral, content-ignoring comparison applied from a disinterested, itself neutral outside, which avoids realising a not-neutral, but interest-guided, selective, individualised perspective. Addressed in this objectifying perspective, the observed content is allowed to resonate in the researcher only in its generalisable, comparable aspects, and the corresponding investigative approach covers only the most stable, less specific, least qualifying aspects of it. In fact, the latter are mapped in an inherently a-temporal and non-local form, as in empty vessels applicable to whatever it may concern. The interactions' qualifying specific rinse through this hermeneutic sieve's metric grid structure like water tried to be drawn from a well with a fork.

Agency

A pivotal term and concept used in the present approach is that of a capability-sourced agency, seen as latent if not yet realised, and as continuing to be capacity- and latency-based also during a realisation. This term's choice helps to understand how partners of an interaction manage to stay the same while changing in mutual adaptive convergence: they

enact a both momentary and moment-transcending joint structure creation. The confluence of structuring capacity of realisations that happens on the underpinned potency level allows for adapted performance based on a restructured underlying capacity. Since agency concerns potential action, it tacitly contains the action's immanent temporality and its individuality-transcending directedness targeting what is acted upon. So, combined with its immanent features, it also possibly lives the moment- and individuality-transcending ones. It is a suitable descriptive tool for enlightening the dynamic of singularity and categorical contextuality unresolvable in static, decontextualising, and objectifying terms. Also, it allows to shed a new light on the infertile opposition of subjective individuality versus a supposed only objective categorial nature of reified *things*.

Objects

In terms of objects, the common idea is wrong. It limits them to their borders in their frozen, concretised momentary tangibility, without taking into account their potency, as potential future participants engaged in a specific interaction. The latent specific is mentally allocated in the silent object and deserves to be recognised explicitly. Doing so, what is seen as a concrete piece is expected to open a structured interaction space, created, embraced, structured, and temporarily filled from all sides by participating agencies. To enrich the imagination, enabling it to go beyond the temporally immobilised and positionally fixed concrete, allows imagining their optional interactional doing and their dynamic effect via co-constituting an interaction space. So, if not ignoring the empirical knowledge about what an object is able to do in specific interactional terms, a static object is realised as a latent potency to provide and transiently open a semantically structured interaction space. From its imagined condensed immobile state as pure presence, it morphs into a momentarily anticipated structured process combining past, present, and an attended interactionally specified future.

Words

Words, as inactive objects, are storage forms of potential dynamicity, realising their contextual, situational content and meaning. Realising this hidden meaning consists of a specification in the course of a further process' specifying contribution. The resultant momentary meaning emerges from this interaction. The option of a meaning's systematised unfolding offered by a word can be seen as its giving space for a future, convergent interpretative dynamic. So, what a word, as a lifeless thing, in fact provides in realised interaction is a potential space ready to contain this specified interaction's dynamic. Words, hence, when seen beyond their storage form, are no points and lines, but spaces, semantic spaces, spaces for situation-specific dialogue and interpretative information processing.

The present description's form

The experimental approach presented here requires a form different from a mathematical proof, for example. Empiric consists of tentative approximation under the guidance of a hypothesis which needs to be verified or falsified by repeated investigative interaction. It itself is interactional right from scratch, and it concerns observed interactions. So, it emerges

from, and refers to interactional dynamics, exerted and observed at a given place and moment. The observations and the observations' individuality then get generalised to be valid for other moments, places, and observers. At the end of this categorising process, objectified items result which are imagined as detached from their individual sources, be they the observing person, the moment of observation, or the observation's place. So, the specificities of time and place, as well as that of genuine individuality, fall out of this decontextualising universe; they become strangers, even if they are the true parents of the created a-temporal, placeless, and singularity-free universe. This universe is described in preferably metric terms. Meters applied from the outside in general generalise by their mere application, consisting of the use of general scales, allowing for individuality-ignoring comparability in general terms.

To reintroduce time, space, and content in their individuality, one can go back to the roots of empiricism, which can be found in the ancient Greek observers of nature, called *ta physika*, concerned with also general features, as laid down in texts following the ones about physics, called *meta ta physika*, or metaphysics, later. To present an approach concerning the very basis of scientific objectivation, one needs to refer to the *meta ta physika*, also. This implies embedding objectifying versions into their wider hermeneutical horizon, made of epistemological reasoning and thoughts about the depicting capacity of common terms, amongst others. This in turn requires an arrangement of text which differs from the common segmentation into scopes, methods, and results. The results are implied in the text's ongoing reasoning and only emerge in the reasoning's continuity. They cannot be represented in the static form of numbers, probabilities, or graphs, and instead would need an animated exemplifying.

Combining Science and Humanities

The need to re-discuss general topics like space and time makes going beyond the present division of science versus humanities a challenging manoeuvre. Whereas science builds on a solid, internally homogeneous fundament of approved terms and concepts, this does not hold true for the humanities. There, you have a manifold of trains of thought, based on different concepts of the meaning of terms, terms which often are spelled identically but nevertheless filled with a different interactional specificity. There is no uniformity-providing convergence of threads of inquiry, pointing to the one humanities' homogeneity, as established in science. So, in trying to approach both roots of human thought, a simple addition is impossible. Instead, one must respect the individual semantic horizon and further semantic context of terms and concepts considered in the realm of humanities, and explore the semantic tissue woven "around" the supposed content for any single item. This requires a circumferent check of optional aspects which might allow access to the supposed sources of interactional coherence. With no chance to target this content all at once, and seen under just one single aspect, the approach needed in humanities resembles an investigative strolling around, a manoeuvre not sufficiently realised by just following a single path connecting one exchangeable point with the other.

Exploring the supposed content, in contrast to a mono-linear proceeding, is not a random walk, but a continuity of concern aiming to investigate observed co-agencies' systematic. It is a resonating, accompanying by-walk, instead of a straight-forward directed enterprise. The descriptive system erected is aimed to resemble the described system in being an

inherently qualified and interactionally systematised organic, a matrix made of semantic spaces, and not of a single rope.

The disadvantage of this approximative, experimental form is the higher demand of inner time spent on it, and the advantage is the prospect to understand better than by simple mapping of fixed figures. So, not being based on repeatable metrics and semantically fixed, community-approved terms, discussing humanities' topics requires another form of presentation.

This needs to enact a heterogeneous semantic landscape, filled with probatory semantic vessels, calling for individualised checks if they catch the content's relational internal and outside-oriented dynamic. In the arts, an intriguing, inhomogeneity-oriented non-atomistic form of representation has been developed by the Newton-critique poet and painter William Blake (Plotnisky 2005). So, since an established basis cannot be subsumed, and extended deliberation is needed, making any presentation that covers both realms a bouquet, and not a straightforward task.

The tentative empiric system formulation

Hypostasized systems consist of systematically combined agency, exerted via structural convergence of the system's contributing elements. The latter are seen as being addressable and implementable in a not random, not arbitrary, but structured and systematic form.

So, the smallest unit is an agency identifiable via its systematic interaction with the identifying agency and further agencies, such as those observing and contextualizing them. The smallest unit, then, consists of partners, and not of single entities working monad-like for themselves, without a relevant, jointly meaning-generating semantic outside. Seen as primordially partnering themselves, the units are understood as mandatorily partnership-ready also for further partners. They hence are understood as addressable and accessible also from their partnership's outside in principle. Their supposed identity is not monomeric, but an identity emerging from co-acting with others and consisting of this co-acting. So, it is lived and realized in the form of a relation, distinguishable from further, simultaneously enacted relations by cooperation-individualizing dynamic, momentary, and prolonged consistency. This unit-typic consistency in terms of qualitative and quantitative features may come into dynamic resonance with further dynamic consistencies, as interacting partners, to eventually converge in joint, internally homogeneous, unit-generating orchestrated agency. So, the supposed units may grow to larger ones without swallowing and deleting the contributing smaller units.

One distinctive feature in this supposed cooperability is the maintenance of the participating units' individuality even during their extended interactions. This logically requires actional consistency as lived within the corresponding interaction, realized as an interaction-oriented feature, or an assembly of features that become relevant just at the very moment of encounter. This is the way a jointly produced momentary meaning emerges in, and by, the interaction, its unit-typic dynamic, realized via opted access-allowing and access-specifying features. The latter may be termed the agencies' partner-oriented aspects, emerging in an interaction-specifying way. They realize the contributing agency's perspective, and, grace to the contributing agency's systematizing capacity, are at stake but now and stabilized and perpetuated in continuation of the qualified interaction.

To come back to the beginning, what is called a unit in semantic systems theory consists of partners who reliably imply their individuality, expressed and realized as their interaction-specific perspective. All partners form interaction units that are open to further interacting agencies, the latter both as acting individually and as sets of interacting agencies.

Being understood as a system, all interactions occur under the constraints of the concerned partners' preserved individuality and perspectivity. It is this individuality and its interactional correlate, the individual perspectivity, that creates the resulting system's addressable inside, being what turns out to be relevant, alias contextually, interactionally meaningful under the auspices of a present perspectival, aspectual partner's access. The content of a semantic system, hence, consists of relevance structured and enacted in a systematized interactional, unit-creating dynamic. This describes and descriptively addresses identifiable reality as different from a hypothetical non-interactional mess of monads, and as identifiable right because of this systematic interactional difference to random, irrelevant, reasonless a-systematic tohubohu. So, identity-founding contextual, aspectual, interaction-specific relevance as its present meaning provides the semantic fill of an empiric, factually interacting system; it makes the system semantic and conform to experiential and identifiable reality.

Meaningful right from scratch

Following the above derivation, meaning co-emerges as a constitutive aspect of addressability in every systematized interaction. It co-emerges in the form of the corresponding interaction, jointly produced, and not only attributed by an active partner to a passive, un-relational object. So, both interacting agencies perform as subjects, as consistent sources of their perspectival, aspect-creating individuality, with their systematically produced relevance structure open to further systematizing partnering. The interacting agencies' relevance horizon depends on the agency-inherent chances to contact further agencies, and units of them. If metric distance is outperformed by distance-levelling contact capacity, it becomes a minor, or even neglectable, feature of the emerging semantic space.

Mutual adaptation

Making a difference compared to the starting individual processing of its contributors, the individual agencies engaged in unified processing have succeeded in adapting to the other's perspectival restrains and reshaped themselves to transient conformity, as relevant for both. It may be seen as if both, or all partners acquired additional "knowledge" concerning the other, to create adaptivity and persistent mutual consideration in further performing. This "knowledge" refers to the jointly produced systematized relevance structure concerning further perspectival cooperation and hence is knowledge about realized and further potential meaning. A semantic and empiric system, hence, consists of knowing about and of jointly and systematically generating meaning. It is a knowledge-informed accessible container of situational relevance and interactional, perspective-immanent meaning.

Mutual perspectives

Semantic systems are interaction-based and naturally combine, implement, contain, and conserve mutual perspectives. They are open systems under co-qualifying constraints. Their systematizing quality is based on moment-transcending, sequentially and consequentially identifying partners' capacities, to be understood as their permanence-securing sources and potentials. These become situationally, that is, partner- and context-specifically realized in an interaction-individualizing fashion. It is this interaction which forms a semantic system's smallest dynamic unit. Being based on and consisting of interaction, each such unit is open for further interaction.

Made of converging, mutually specific, and situationally relevant interactions, a semantic system is a vibrant assembly of mutually resonating interactional units, each made of specifically outside-oriented, yet mostly unintentional agencies. Intention only emerges if a self-acting separating agency in the form of a materialized border-creating instance comes into play. Then, the additional, enforced identity generation becomes a time-independent feature, and identity gains two sources simultaneously: the one active as the agency's coherence-providing source, the other provided by the outside just by itself, without a need for oriented, intentional, distinguishing action from the agency's side. This externally provided border additionally qualifies an inside as a semantic character; it strengthens its interiority, or *insideness*, in Edward Relph's term introduced in geography and architecture (Relph 1976, 1996, Seamon et al. 2008).

Building on this additional option, this interiority can be referenced in a recursive, self-oriented, self-focused manner, which corresponds to a selected goal, namely that of perpetuating the interactional agency in this self-specific form. Before, this perpetuation either happened, or not. Up from then, the chances are enhanced by an additional form of orienting, and a corresponding directed fuelling of resources into the self-maintaining perpetuation. In the end, this becomes present as the speech-based self-consciousness in human life, with the coherence-providing tool of language additionally supporting the self-identification from outside, like the outside borders.

Discerning segregation as information

Without reference to what is separated in detail, separation as such itself contains, enacts, and is information. It forms pure, abstract, distinguished one-sidedness different from the other side. The distinction of the two sides contributes to their further individuality-generating individuality in an inside-conform manner. To be, and to be an inside go conform with each other, both qualifying conditions converge to the one, being an identity. So, the separation sets an additional mark on top of a pre-present, moment-transcending identity. This additional mark, in turn, enhances, or in fact first introduces the chance to be concerned with oneself, as a separate, partially autonomous agency. The formatting information contained in the identity now additionally implies to be categorically different, and not only because of this or that feature being different by itself. It introduces a categorical, singularity-transcending level in existence.

Categorical information

Categorical information covers a manifold of individual qualities by referring to, instantiating, and performing *asshareable aspects of systematizing agency and identity*. These categorical forms of information have a lowered need for structuring energy since they have a broadened effect in terms of the size of their semantic horizon, and at the same time, they are relieved from going into detail by not being obliged to refer to only individual aspects of covered agencies. So, these can be addressed irrespective of further details and, as a bundle, as a conforming set right from the start. They engage in a more general form of interaction, which is executed in parallel to the inside detailed information exchange. It neither dominates this fine-granule dynamic nor neutralizes it. Instead, it is an additional overtone accompanying the fundamental sound of the details. It allows to coherently act as a block, a set, a system. As the paradigm of performing as an informed and informing system, categorical information establishes and subsequently discerns trans-individual, categorical interiority. It alone would not be enough to establish the interior system's dynamic harmony; for this, the mutual adaptive information implementation on the level of the details is needed. Combined, an umbrella force and an offspring force then create a system's dynamic, open-minded totality.

Dynamic convergence results from the combination of individual capabilities to systematically interact with individual agencies in detail and sets of agencies in parallel. Categorical information-based system generation evokes an understanding both on the individual and the collective systems level. Again, this is neither a hierarchical relationship nor a sequential one. Both levels co-act in parallel, and each level follows its own rules. Concerning set generation, and based on its gradual ignorance of details, these may go on in partial independence of detailed issues and introduce uptake of new elements, and sets of them, into the present set. So, by virtue of categorical information's activity, a new level of adaptational flexibility can be achieved.

Primordial meaning, implied interpretation

Thanks to the primordial structuring, which gives the achieved interaction a specific, identifiable form that can be reliably referred to by other agencies, semantic systems realize inherent and addressable relevance and operative meaning right from scratch. The fact that the meaning is co-constituted by partnering, perspectival interaction does not mean that it is provided only by an attributing outside. It resides as an inherent perspectival potentiality in both or all participants of the semantic system interplay.

Cutting such a breathing, resonating, specifically interacting system into pieces would interrupt both the interactions and their aspectual specificity. The typical objectification, resulting from decontextualizing immobilization and fixation of shredded pseudo-identities, risks forgetting about the pivotal aspect of a semantic system, its mutually partner-specific interpretative agency, creating the situational, contextual meaning of the concerned encounter. To interpret, to apply a hermeneutic, is seen as a human privilege. In fact, molecules either step aside to perform with someone else, or they interpret each other to then engage in a specified and specifying interaction. This interpretation, or what we interpret to be one, is an integral part of the molecule's overall activity. It is not a separate manoeuvre, performed by an extra or additional instance, like by nerves in addition to the interpretation done on the molecular level. So, realizing a perspective, providing accessible shareable aspects of systematizing agency, acting on and reacting to these offers via interpreting

and allocating them to eventually imply them into the own further processing – all this is done in one actional flow, as an inherent integrity.

Gradual decontextualization, leaving the analysis products embedded and alive

If decontextualization goes beyond an empiric limit in hypostasizing the solipsistic, non-addressable existence of a dissected object, broken out of an integrity, the first logical error lays in ignoring the primordial presence of an interacting observer, stating that the supposed object exists. Regardless of the addressed entity's details, the observer-observed item interaction as such exists beyond doubt. So, it is a paired entity, not one made of only a singular contributor. This interaction contains a previous orientation and focusing, an interpretation based on preformed knowledge and assumptions. The only difference here seems to be that the observed object is thought to do nothing, to provide nothing, to be a neutral, a priori meaningless emptiness to only later be filled with an attributed meaning.

In fact, concerning this human operation of observing, gestalt psychology was able to prove that the imagined objects in fact provide interaction-specific shareable aspects to which the observer's aspects react, and on which they act. So, a chair provides the categorical information, realizing its essential character in the interaction: I am something one can sit on. This information, regardless of the chair's material and functional details, is categorical, allowing a generalizing, energy-saving, and nevertheless distinctive approach from the observer's side. To come back to the example of a chair, the German American psychologist Kurt Lewin stated that it emerges as a component of an interactional, vectorially characterized topological field, as he called it, that is, a system consisting of contributing, interacting partners, and not of isolated a-relational and a-dynamized objects.

What makes a semantic system run?

Interactional, specifying energy is emerging from, and consumed by, the enacted interactions and their specifying agency. It can be conceptualized as a transient densification and a following relaxing expansion, reaching for further condensing interactions. The pulse of this densifying and diluting interplay forms, or better to say, is the semantic system's time and timing. It is not the contact per se which is energetic, but the incremental superimposition of previously isolated structures causing a dynamic resonance. This resonance amplifies the structuring force now jointly applied on the interacting pair's immediate future, as its shaping, modelling creativity, and capability. The latter may be strong or weak, but in any case, it performs as a semantic, meaning-creating energy. This energy is not stored as energy but resides as an integral potential capability within the coherence-providing roots of an agency. If performed in successful creation of an extended coherence, this capacity's realization additionally creates resonance energy, without an intention to do so. The capability to generate energy can be stored, but this energy is individual, being completely realization-dependent; it does not exist beyond actual realisation. So, it may be anticipated to emerge, but cannot be addressed in its potential state. This corresponds to the ancient Greek differentiation of potentiality and reality, with the latter called *energeia*, referring to the work, *ergon*, really done, based on the supposed underlying potential, as *dynamis*.

The resonance resulting from intense, densified collaboration is stronger than the one created in a more distanced, not tightly coupled interaction. The resonance may be *inspiring* by providing itself as a template for future, itself energy-generating coordination. It serves as an example via individual structuredness, but not as a conditional container to be opened for whatever kind of processing. So, there are restraints implied in this form of energy, in imperatively being structure-related and structure-concerned. Since fluidity is a metaphor of adaptive dynamic flexibility, fluids enriched with an enthusiasm-generating, inspiring, resonance-challenging, themselves fluidifying character form a central part of human culture.

Compared to the energy provided by heat, semantic energy is primordially structure-bound and future-specifying. Yet, also heat, in terms of semantics, may perfectly function as semantic energy, given the situation makes its recipients perceptible for its harmonizing, structuring, future-shaping aspects, such as that given in a warm place within a winterly environment, appealing to social interaction of living beings, including humans.

Semantic energy is a paradigm energy, and it promotes structuring in an already structured world. It initiates adaptive restructuring in the form of structure-based creativity. The latter, hence, is not a *creatio ex nihilo*, but a parented, scaffolded, chaperoned one, contextualized right from the begin, concerning being as being-in-the-world, to use the Heidegger term (Heidegger 1996, 2006).

Flourishing from inside, embraced from the outside

The parenting incitement embraces processes inspiring them to resonate. It serves as categorial information not concerned with details only, but with content and its supportive, fitting contexts, that is, it is engaged in interaction with the emerging systems in their embedded totality. This is a developmental process, different from what is seen as being present just by itself, instantly, without previous incentives and initiating phases. The supportive prehension also embraces serially, that is, periods of time, events, stepwise systematizing connections of a past with a presence, and its structured progress in what Husserl called *protention* (Husserl 1985, see also Miall 1995).

It individualizes both in parallel, as a distinction to what goes on elsewhere, and in the form of individual sequences, story lines, plots, sequences. This may be seen as an upbringing, a vertical move out from a horizontal presence.

Semantic systems incorporate, include, contain, and enliven historicity, hence. This may sound strange in the case of molecules engaged in structured interaction, but it holds true, nevertheless. Conformation changes that happened at some time before may co-determine what happens in the moment, so there is a string going back deeper into the previous history than other strings with a more recent beginning. These coherence-production chains root differently in the past's depth. As well, present formations may have different long-standing effects, a different prospective partial agency, a different duration, or *durée* in Bergson's terms. So, concerning the longitudinal extension coming from the past and proceeding to the future, the coherent action strings individually combining past and present feature to proceed into their future; there is a manifold, and not a uniform, moment-fixed assembly. Some tones last longer in music, their reverberation continues, and their reference to past melodies and harmonies goes deeper into the previous story.

As well, the thickness of the coherent developmental string varies depending on the width of branching of its roots and the reach, richness, and diversity of its future-oriented branches. So, every coherence-providing contributor in a semantic system has its own individuality in the form of a distinct and distinguishable history, a personal life.

In consequence, neither meaning nor historicity must be implied afterwards, and from the outside to a performing system's elements. They are in right from the begin, co-emerging with their coming into life. The same holds true for further dynamic components, some of them conventionally exclusively attributed to man beyond infancy, like perspectivity, interpretive capacity, primordial contextuality. All these are embedded features of systematized co-processing. The only differentiating feature not addressable as simply present beyond biology is intention, and intentionality. This deserves an extra chapter, the following one.

Intentionality

To make a selective difference concerning the future, a stable, moment-transcending differencing capacity must be at work. To become a conscious choice, such choices must not be tacitly implemented in present action, but need to be addressable as such, as distinct instances. Self-identical reproduction installs such instances in living beings, providing the options of continuation and discontinuation. Here, the options are implied in present activity and not addressable in combination as two optional paths. The trajectories are chosen without intention, but that there are choices at all forms the way to later allow for them to be chosen intentionally. This requires instances capable of granting the options a distinguishable gestalt by introducing them into a paralleled form of presence, allowing for preference to become valid.

In living beings, preference of one type of food over the other, or one partner over the other, or one environment over the other all is based upon these options being co-realized also within, and as part of, the living being's internal processing. This gestalt instance might be called the living being's *mind* – always keeping in mind that it is not a disembodied entity (Ciaunica et al. 2023).

As an integral aspect of the whole system's functioning, it co-creates an addressed processing via its own harmonic, resonating activity. It is not a simple mapping, but a convergent co-processing with material aims that differ from the observed processing's ones. The resulting interaction pair is the dynamic unit effective in the system built by the living being in its world.

Pure outside, pure inside

A pure outside does not exist since it has neither locality nor a moment. A pure inside is a fiction as well, since if it were pure, there would be no other to address it, and we would not be able to imagine or talk about it. If the latter happens, this means an inside corresponding with another inside, with both playing the double role of being an inside and a specified, interacting, and hence relational and not pure outside to the other. Nevertheless, in each inside's nascence, there might

be a time lag concerning its externality. So, the emergent phase may be seen as concerned only with itself, establishing its inner connectedness and systematic. It is the aurora moment of coming into the world, valid for all that becomes a distinct inside.

Yet seen from this short-lived nascent position, during which other insides are not experienced, addressed, and realized as existent, the contradicting outside consists of nothing, it has no structure, and corresponds to structure's, as the inside's definite extinction, as death, and chaos. So, the dynamic of emergence co-creates a dynamic of worldviews, the stable one supposing structuredness everywhere, the transient, nascent one putting into doubt this universality, and instead questioning the everlasting quality of life, by contraposing its abstract, pure, unconditional contrary, death. Not taking existence as guaranteed, given for free and by itself, and instead taking its dynamic needs of naissance and renaissance into account, the resonating antithesis, issuing death, disorganisation, and destruction necessarily co-emerges.

Seen from the imagined background of non-existence, prospectively and retrospectively addressed as a not yet and not any more being, existence, and existing as such come into mind. Here, a corresponding reasoning begins and asks for final forces and reasons of being structured and recognisable at all, of being something engaged in interactional, such as a reasoning dynamic. This level of self-critical questioning is deeper than the one taking structuredness, and the corresponding multi-inside quality of a universe for granted. It is not irrational, but nevertheless deals with questions that cannot be asked and answered in terms of simple, enduring empiric. It concerns the transition phases of emergence and decay, and not the in-between phase of stable, self-reassuring life and existence.

This is not an emotionally neutral topic, since thinking of pure interiority concerns a phase of unhinged exposedness, fragility, unprotected vulnerability, with no mothering, no scaffolding, no supportive matrix, no protecting shield, and no orienting relatedness at all. Seen from the standpoint of stable relational embeddedness, birth reaches out to this relatedness and inherent contextuality, whereas dying leaves it. The eternal cycle imagined in this trans-individually iterated scheme has the organised stability as its overarching, generalising default mode, and birth and death as its individualising exceptions, positioned at the border of the cosmos. At the same time, the empiric of life and death also realises the fact that the destruction of a living being is absolute, and at the same time exerts a decomposition to smaller ensembles of order and relatedness. The overarching ownness and individuality is replaced by the ownness and individuality of less complexed units, corresponding to a complete loss of the first and a survival in the form of the latter. Focusing on the organisation aspect only, one might say that organisation as such is preserved. Yet, its re-establishment after dissolution does not concern the individual composite, but only the general chance of fragments to reunite in the form of another identity. In living beings, thanks to generic potency materialised via genes, this goes on according to a prevailing scheme, which does not level the previous individuality's uniqueness.

Empiric forms of uniqueness

Every identity, and each of its moments and localisations, is unique. Uniqueness cannot be scaled, only its underpinned

degree of composedness. So, there is an acceleration concerning the latter both in terms of simultaneous multiplicity of components and their sequential acknowledging of each other in dynamic co-processing. The origin of life is said to also depend on the creation of distinct, materially stabilised interiority, protecting the level of mutually specifying composedness against disordered fragmentation. This implies membranes as a new communicative feature added to the previously implicit inside-outside structuring. This distinguishing and selectively connecting feature, thanks to its communicative and identifying capabilities, co-creates the inside's specificity in terms of individual composing. It serves as a potential, allowing addressing, identifying, interpreting, and specifically answering processes to emerge. Forming a world-in-itself, it is functionally positioned between the other worlds of distinct insides and corresponding, less defined outsides. Janus-like, it sequentially stabilises and momentarily enhances an interior's categorical distinctness compared to its outside and co-creates its distinguished individuality. Acting as a catalyst for individuality and interiority, it makes the previously only tacitly implied interiority explicit and active as such, corresponding to an interior's strengthened and stabilised uniqueness. Again, this uniqueness is not a feature exclusively reserved for living beings; it is just given a more enduring gestalt in the case of membrane protection.

An often-overlooked feature of the in-between world established by membranes concerns their effects not in parallel, but in sequence. They contribute to giving each moment a distinct individuality compared to its past and future by co-shaping a distinctive and moment-distinguishing dynamic, such as by inserting a beginning and an end of installed co-processing. This corresponds to the mythological function of the goddess Janus, being responsible for the start and the end of periods, and therefore used as a name-giver for the starting month of the year, Januarius, January. By composed activity in parallel and sequence, the in-between worlds serve as an identity and uniqueness catalyst in terms of space and time; they co-create times' and spaces' granular individuality.

Creation of interactive contexts

Convergence of specific potentials' realisations concerning their mutual orientation and accessibility creates transient interactive units which, by virtue of their interactions' distinctness and specificity, differ from other such units, or a not further determined environment. These cooperating units contain all contributing processes, be they spatially inside or outside an entity. The decisive point is their contributed relevance to the end product, the convergence unit. If empiric shows a dynamic to go on as a distinguishable unit, a mutual, semantically oriented aspect- and preference-provision must also be assumed. This needs not be intentional. The resulting units may cooperate with further ones, maintaining an individual selectivity, to eventually create larger cooperative units. These may be addressed in total, as single homogeneities, or partially, as larger units' subunits, or interactional elements. The surfaces accessed by interacting agencies can consist of, and be an aspect of, either such elementary, or set units, allowing for a simultaneity of detailed and gross connecting. What shines up in human agency and awareness, hence, is the result and product of a continuity of multiply sourced interactions, emerging from a manifold of individual and combined potentials acting simultaneously. The categorical divisions such as into a mind, and a body, or intracorporeal and external processes do not correspond to the empiric, category-transcending systematic and system-creating merger of activities. The semantic systems approach

outlined here offers an alternative answer to the traditional body-and-mind, and individual-environment questioning.

Epistemology

The present theory's epistemology is based on the empiric approach suggested by Aristotle. Its differentiating feature is the combination of observation and hypotheses, the latter tentatively derived from these observations. The hypotheses concern supposed sources of coherent agency, addressable from other such potentials' realisations' side. The pivotal passages concerning the identifying procedure in Aristotle's works are: "everything is defined by its work and capacity (*dynamis*)", *pánta dè tō érgō hōristai kai tē dynámei*(Aristotle, *Politics*, Pol I 2, 1253a23, cited in Ross, 1957), and "everything is defined by its work", *hápanta d' éstin hōrisména tō érgō*(Aristotle, *Meteorologica* 390a10-13, cited in Lee, 1952, p. 371-372).

Historical remarks

The empiric systems theory, as outlined here, did not come out of nothing. Instead, there is both personal and intellectual continuity which led to the eventual convergence of a systematic approach. In addition, there is a resonance with realms of thought going back to a non-Stoic interpretation of Aristotle's empiric (Schmitt 2011). Starting from a background combining biology, biophysics, and chemistry, our research group referred to the philosophies of Wilhelm Dilthey, Martin Heidegger, Alfred North Whitehead, and Hans-Georg Gadamer, with the latter personally encouraging our project, hosted by his follower as chair of the Heidelberg University philosophical department, the Whitehead and phenomenology specialist Reiner Wiehl (Mul 2014, Froelich et al. 1998, 1998b, Miall et al. 1998, Froehlich et al. 2012, Froehlich et al. 2016a, 2016b, 2016c, Froehlich et al. 2018a, 2018b, 2018c, Froehlich 2018, Fröhlich 2019a, 2019b, Froehlich et al. 2019a, 2019b, 2019c, Wiehl 1990, 2016, see also Mitchell et al. 2023, Hughes et al. 2024). The late biologist and Husserl-scholar Helmuth Plessner's phenomenology also played a pivotal role, with the reference to his also Kantian approach enthusiastically supported by his late widow, who had edited his work (Pietrowicz 1992, Mul (ed.) 2014). None of the cited philosophies, except for the Aristotelian *dynamis-energeia*-concept, could be directly implemented into our group's approach. In fact, it has been more a productive, vitalising partial conformity resonance with diverse systems of thought than a direct continuation.

Corresponding to the author's second and third professions as a paediatric allergologist and psychotherapist, we focused on the formal description of biopsychosocial interactions in children suffering from asthma and having suffered from psychosocial stress, based on results of an empiric study done by a child psychiatrist also working in our group. We got a grant from the Medical Faculty, Heidelberg University, to formulate these supposed interconnections in terms of stochastics and medical informatics. In the end, we were able to refer to the algebraic formulation of content-based dynamic information, to eventually provide an advanced model of biopsychosocial interaction. Despite our broad basis of contributing professionalism, a solution to the long-discussed problems of biopsychosocial interaction was not at hand easily. Instead, it took some 30 years to make progress, enabling us eventually to also focus on aspects of person-

centred healthcare, culture and leadership, and advanced teambuilding in social work, as our model's practical applications.

Embedding the approach in previous and contemporary thought

The objectifying technique used in science, and the hermeneutical tradition in philosophy do not fit together. Aiming to develop a concise, internally homogeneous approach to individuality, together with, and beyond, objectified corporeality, cannot build on a well-prepared theoretical basis. So, this basis needs to be built anew. Not providing a direct precursor to connect with, we were nevertheless able to select a few directives into what we were investigating. Step by step, we developed, published, and discussed our approach, enabling us to eventually present an advanced model of biopsychosocial interaction. In this context, important impulses came from Aristotelian philosophy in its non-Stoic interpretation, such as further developed by St. Thomas Aquinas and outlined in our co-author's publications, and from the existential ontology of Martin Heidegger (Schmitt 2008, 2011, 2016, Heidegger 1996, 2006).

Being hosted by the Gadamer-follower Reiner Wiehl, also Gadamer's dialogic phenomenology played a pivotal role, as did our host's main topic, the philosophy of Alfred North Whitehead (Gadamer 1989, Whitehead 1978, 2009). There is a partially Heidelberg-born train of thoughts from the biologists' side, which we considered, personally encouraged by one of these philosophers' editors, his late wife Monika Plessner. So, both the work of the later Husserl-trained sociologist Helmuth Plessner and the work of the Heidelberg biologist Johann Jakob von Uexküll, who developed a concept of contextuality valid, but not exclusive for living beings (Kull 2001). Concerning biosemiotics, a term introduced by Friedrich S. Rothschild (Kull 1999), we also refer to the enactive phenomenology and biosemiotics *enactivism*, based on the theory of biologists like Humberto Maturana. (De Jesus 2016, Stendera 2015, 2016). We developed a concept of ubiquitous semantic spatiality and temporality which exceeds similar concepts reserved for living beings, such as the one presented by Bachelard, and more recently by Ireland. (Froehlich 2018, 2019a, 2019b, 2022a, 2022b, 2024, Rüter et al. 2019, Bachelard 2014, Ireland 2015, 2024, see also Mitchell 2012, Gärdenfors 2000, 2004, Warglien et al. 2013, Espinoza 2023, Tramonti et al. 2019, Raud 2021, Maciag 2022).

Roots and fruits

Without providing the chance for unaltered continuation, a range of philosophies served as non-arbitrary roots to allow for fresh flourishing in a new form. These theories, as all contributing process-realizations of potentials in our approach, converge in a non-additive, and instead perspectival, selective, adaptive manner. Great care was spent on establishing a concept of inside-filled space and time, in contrast to their purely external form, applied via metrics. A corresponding approximative topology equivalent, allowing for individualising discontinuity, was developed. The reach into a specified future, as well as the sequential continuation of a process-providing past, were discussed. Perspectivity as an inherent feature of each moment's content's individuality was considered, as its unplanned, but partner-specific realization via shareable aspects of the concerned processes' systematising agency. These shareable aspects of identity are differently

oriented to allow for a new form of convergence, which then creates a new, singular unit, performing as a new identity. The processes converge in the form of situationally shared roles, thus creating a specific, implying their mutual non-mental, but factual consideration. The latter may be seen as resulting from an unintentionally, but effective, previously oriented recognition and a corresponding implementing interpretation. The bridge from one to another process builds on these seemingly intellectual processes, performed as unintentional provision, acceptance, and eventual mutual implementation of specifying information. The dynamic coherence of newly created jointly processing forms interactive units ready for further coherent, unit-creating, mutually informing, and effectively informed cooperation. This way, a vital system is qualified in empiric form, with the information implied and enacted acting as the system's momentary aspectual meaning, as seen and emerging if addressed from other processes' side.

Training

Applying empiric systems theory to improve systematic functioning in care, healthcare, and other social instances, we developed an improv theatre-based training. It is aimed at balancing existential *insideness* with trans-individual care for others. Focused on the information processing required in this, the playful, detached as-if character of the training allows adjustment of the balance in a more conscious, situationally adapted form. (Lit Fröhlich et al., 2024, see also Reason 1997, Schulz von Thun 2008, Pahl-Wostl 2009, Boysen 2013, De Jaegher et al. 2017, Bahrs 2022, Barkell 2020, Marx 2001, 2019, Müller et al. 2022)

Statements and Declarations

Conflict of Interest

The author declares no conflict of interest.

Data Availability Statement

Data sharing not applicable—no new data generated.

References

- Bachelard, G. (2014). *The poetics of space*. Penguin Classics
- Bahrs, O. (2022). Introducing the Subject into Primary Care - Person-Centeredness in Primary Care Needs Participatory Research. *Global Journal of Medical Research(B)*, 2022, Vol XXII, II, Version 1: 65-75
- Barkell, N., & Snyder, S. (2020). Just culture in healthcare: An integrative review. *Nursing Forum*. 56. 10.1111/nuf.12525.
- Boysen, P. (2013). Just Culture: A Foundation for Balanced Accountability and Patient Safety. *The Ochsner Journal* 13

(3): 400-406. Available at: <https://www.ochsnerjournal.org/content/13/3/400>, last accessed Feb 17th, 2024

- Ciaunica, A., Shmeleva, E.V., & Levin, M. (2023). The brain is not mental! Coupling neuronal and immune cellular processing in human organisms. *Front. Integr. Neurosci.* 17:1057622. doi: 10.3389/fnint.2023.1057622
- De Jaegher, H., Pieper, B., Clénin, D., & Fuchs, T. (2017). Grasping intersubjectivity: an invitation to embody social interaction research. *Phenomenology and the Cognitive Sciences*. 16. 491-523. 10.1007/s11097-016-9469-8
- De Jesus P. From enactive phenomenology to biosemiotic enactivism. *Adaptive Behavior*. 2016;24(2):130-146. doi:10.1177/1059712316636437,
- Espinoza, M. (2023). Rein Raud: Being in Flux—A Post-Anthropocentric Ontology of the Self. *Asian Studies*. 11. 295-300. 10.4312/as.2023.11.3.295-300
- Fröhlich, T, Haux R, Henningsen P, Miall, DS, Roebruck, P (1998) Attention Based Neuronal Processing: A Probabilistic Model of Non-Hierarchical Neuronal Convergence. *European Journal of Neuroscience*, Vol 10, Suppl. 10, 405
- Fröhlich, T, Haux, R, Roebruck, P (1998b) Prevention of infant asthma on a social and psychic level: Tools provided by an Interaction Model. *Allergy*, 53, Vol. 43, 190
- Miall DS, Fröhlich T, Henningsen P (1998) In the Convergence Zone: A Neuronal Model of Literary Response. *European Journal of Neuroscience*, Vol 10, Suppl. 10, 305
- Froehlich T., Bevier F.F., Henningsen P., Miall D.S., Pompe U., Sandberg S. How words cause asthma; (2012) 31th Congress of the European Academy of Allergology and Clinical Immunology, Geneva, Switzerland, und: *Allergy* 67, Suppl. 96: 315: John Wiley & Sons A/S
- Froehlich, T., Bevier, F. F., Babakhani, A., Chisholm, H. H., Henningsen, P., Miall, D. S., Sandberg, S., & Schmitt, A. (2016a). Updating the descriptive biopsychosocial approach to fit into a formal person-centered dynamic coherence model – Part I: Some few basics. *European Journal for Person Centered Healthcare* 4 (3) 548-556.
- Froehlich, T., Bevier, F. F., Babakhani, A., Chisholm, H. H., Henningsen, P., Miall, D. S., Sandberg, S., & Schmitt, A. (2016b). Updating the descriptive biopsychosocial approach to fit into a formal person-centered dynamic coherence model. Part II: Applications and some more basics. *European Journal for Person Centered Healthcare* 4 (3) 557-566.
- Froehlich, T., Bevier, F. F., Babakhani, A., Chisholm, H. H., Henningsen, P., Miall, D. S., Sandberg, S., & Schmitt, A. (2016c). Updating the descriptive biopsychosocial approach to fit into a formal person-centered dynamic coherence model – Part III: Personhood, salutogenesis and further topics. *European Journal for Person Centered Healthcare* 4 (3) 567-578.
- Froehlich, T., Bevier, F. F., Babakhani, A., Chisholm, H. H., Henningsen, P., Miall, D. S., Sandberg, S., & Schmitt, A. (2018a). The ontology of person-centered healthcare: Theoretical essentials to reground medicine within its humanistic framework – Part I – A centered concept of personhood: Some tools to conceptualise subjectivity. *European Journal for Person Centered Healthcare* 6 (1) 146-156.
- Froehlich, T., Bevier, F. F., Babakhani, A., Chisholm, H. H., Henningsen, P., Miall, D. S., Sandberg, S., & Schmitt, A. (2018b). The ontology of person-centered healthcare: Theoretical essentials to reground medicine within its humanistic framework – Part II – Nascent time and space: rooted functioning. *European Journal for Person Centered Healthcare* 6 (1) 157-171.

- Froehlich, T., Bevier, F. F., Babakhani, A., Chisholm, H. H., Henningsen, P., Miall, D. S., Sandberg, S., & Schmitt, A. (2018c). The ontology of person-centered healthcare: Theoretical essentials to reground medicine within its humanistic framework – Part III – The logic of subjectivity: wrapped in one's individual history. *European Journal for Person Centered Healthcare* 6 (1) 172-181.
- Fröhlich T. (2018). Some thoughts about the terms “centre” and “inside,” in relation to the concept of person-centredness. *J Eval Clin Pract.* 24:1005-1010. doi:10.1111/jep.129996
- Fröhlich, T. (2019a). General system theory (GST) and a non-reductionist concept of elements: suggesting a corresponding discussion based on Tramonti (2019). *Syst Res Behav Sci.* 2019; 36: 342-345. doi:10.1002/sres.2592
- Fröhlich, T. (2019b). Rezension des Internationalen Jahrbuchs für philosophische Anthropologie 2018, Volume 8, Die philosophische Anthropologie und ihr Verhältnis zu den Wissenschaften der Psyche, Hrsg. Thomas Ebke, Sabina Hoth, *psycho-logik*;14:393-415, Verlag Karl Alber, Baden-Baden, Germany
- Froehlich, T, Bevier, FF, Babakhani, A, Chisholm, HH, Henningsen, P, Miall, DS, Sandberg, S & Schmitt, A (2019a). The social part of the advanced biopsychosocial model. Part I: The volume approach. *European Journal for Person Centered Healthcare* 7 (1) 158-172.
- Froehlich, T, Bevier, FF, Babakhani, A, Chisholm, HH, Henningsen, P, Miall, DS, Sandberg, S & Schmitt, A (2019b) The social part of the advanced biopsychosocial model. Part II: Some basics, concerning volumes instead of points and lines. *European Journal for Person Centered Healthcare* 7 (1) 173-189.
- T. Froehlich, Bevier FF, Babakhani A, Chisholm HH, Henningsen P, Miall DS, Sandberg S, Schmitt A (2019c) The social part of the advanced biopsychosocial model, part III. *European Journal for Person Centered Healthcare* 7 (1):190–204
- Fröhlich, T. (2020) *Fröhlich Groups – well known tools to enhance person-centeredness and clinical team building* European Society for Person Centered Healthcare, ESPCH 6, University of West London, Conference Brochure, 24-25.
- Fröhlich, T. (2022a). Das biopsychosoziale Modell der Medizin. *Der Allgemeinarzt.* 2022; 14: 70-73.
- Fröhlich, T. (2022b) The clinical paradox: acting in two worlds in parallel. *J Eval Clin Pract.* 2023; 29: 748-755. doi:10.1111/jep.13802
- Froehlich, T., Bevier, F. F., Babakhani, A., Henningsen, P., Hillebrand, S., Konschill-Schwesig, H., Miall, D. S., Sandberg, S., Schmitt, A., & Wolfhard, C. (2024). A new approach to person-centred team building, embedded in polycentric interaction theory, parts I–III. *Eur J Pers Cent Healthc.* Forthcoming 2024; 9 (1).
- Fröhlich, T. (2024) Semantic Systems Theory. *Syst Res Behav Sci*, submitted, under review
- Gadamer, H. G. (1989) Truth and Method, Continuum Publishing Group London, New York
- Gärdenfors, P. (2000). *Conceptual Spaces: The Geometry of Thought*, MIT Press: Cambridge, MA, USA
- Gärdenfors, P. (2004). Conceptual Spaces as a Framework for Knowledge Representation. *Mind Matter* 2, 9–27
- Heidegger, M. (2006) Sein und Zeit, Niemeyer, Tübingen
- Heidegger, M. (1996) Being and Time, Translated by John Stambaugh, SUNY Press, Albany, New York
- Hughes, E., & Stendera, M. (2024). Heidegger's Alternative History of Time. *Routledge Studies in Twentieth Century Philosophy*, Routledge, New York, London 10.4324/9781003366904

- Husserl, E. (1985) *Texte zur Phänomenologie des inneren Zeitbewusstseins*. Meiner Verlag, Hamburg
- Ireland, T. (2015). "The Spatiality of Being". *Biosemiotics* (2015) 8:381–401. DOI 10.1007/s12304-014-9227-7)
- Ireland, T. (2024). A Biosemiotic Conception of Space. In: *From Life to Architecture, to Life*. Biosemiotics, vol 27. Springer, Cham. https://doi.org/10.1007/978-3-031-45925-2_5
- Kull, K. (1999). On the history of joining bio with semio: F.S.Rothschild and the biosemiotic rules *Sign Systems Studies*, 27, 128–138. <https://doi.org/10.12697/SSS.1999.27.06>
- Kull, K. (2001) "Jakob von Uexküll: An introduction". *Semiotica* vol. 134: 1–59
- Lee, H. D. P. (1952). *Aristotle, Meteorologica*, Harvard University Press, Cambridge, and William Heinemann Ltd., London, p. 371-372
- Maciag, R. (2022). Theory of Knowledge Based on the Idea of the Discursive Space. *philosophies* (7) 72. <https://doi.org/10.3390/philosophies7040072>
- Marx, D. (2001). *Patient Safety and the "Just Culture": A Primer for Health Care Executives* Columbia University; April 17, 2001 http://www.chpso.org/sites/main/files/file-attachments/marx_primer.pdf
- Marx, D. (2019). Patient Safety and the Just Culture. *Obstet Gynecol Clin North Am*. 2019 Jun;46(2):239-245. doi: 10.1016/j.ogc.2019.01.003. PMID: 31056126.
- Miall, D. S. (1995) Anticipation and feeling in literary response: A neuropsychological perspective, *Poetics*, Volume 23, Issue 4, 275-298, [https://doi.org/10.1016/0304-422X\(95\)00004-4](https://doi.org/10.1016/0304-422X(95)00004-4)
- Mitchell, D. (2012) *Everyday phenomenology*, Cambridge Scholars Publishing, Newcastle upon Tyne
- Mitchell, D., & Loughlin, M. (2023). *The philosophy of person-centred healthcare*. Cambridge: Cambridge Scholars Publishing
- Müller, J., & Bahrs, O. (2022). Value of Learning Processes in Quality Circles for self- help members as actors in Person-Centered Care. *International Journal of Person-Centered Medicine* 2022 (12) 1, pp 5-18, DOI: 10.5750/ijpcm.v12i1.1103
- Mul, J. (ed.) (2014). *Plessner's Philosophical Anthropology: Perspective and Prospects*. Amsterdam University Press, Netherlands
- Mul, J. (2014) *The Tragedy of Finitude: Dilthey's Hermeneutics of Life* (Yale Studies in Hermeneutics), Yale University Press
- Pahl-Wostl, C. (2009). A Conceptual Framework for Analysing Adaptive Capacity and Multi-Level Learning Processes in Resource Governance Regimes. *Global Environmental Change* 19: 354–65.
- Pietrowicz, S. (1992). *Helmuth Plessner*. Verlag Karl Alber, Nomos, Baden-Baden
- Plotnisky, A. (2005). Minute Particulars and Quantum Atoms: The Invisible, the Indivisible, and the Visualizable in William Blake and in Niels Bohr, William Blake and Visual Culture. *ImageText Journal*, (2) 2, Available at: <https://imagetextjournal.com/minute-particulars-and-quantum-atoms-the-invisible-the-indivisible-and-the-visualizable-in-william-blake-and-in-niels-bohr/> [accessed Dec 01 2023].
- Raud, R. (2021). *Being in Flux. A Post-Anthropocentric Ontology of the Self* Cambridge, UK: Polity Press. Available from: https://www.researchgate.net/publication/373744940_Rein_Raud_Being_in_Flux-A_Post-Anthropocentric_Ontology_of_the_Self [accessed Feb 18 2024].

- Reason, J. (1997). *Managing the Risks of Organizational Accidents: Living with high-risk technologies* Ashgate Publishing, Hampshire.
- Relph, E. (1976). *Place and Placelessness*. Pion, London
- Relph, E. (1996). Reflections on Place and Placelessness. *Environmental and Architectural Phenomenology Newsletter*, 7, 3, 14-16
- Ross, W. D. (1957). *Aristotle's Politica*. Oxford, Clarendon Press: Aristotle, Politics, Pol I 2, 1253a23)
- Rüter, G., & Fröhlich, T. (2019). Commentary: patient well-being and individual outcomes in the medical practice: impulses from philosophy. *Philos Ethics Humanit Med* **14**, 2. <https://doi.org/10.1186/s13010-019-0071-x> (**Open Access**)
- Schmitt, A. (2008), *Die Moderne und Platon. Zwei Grundformen europäischer Rationalität*. Verlag J. B. Metzler Stuttgart, Weimar.
- Schmitt, A. (2016) *Wie aufgeklärt ist die Vernunft der Aufklärung? Eine Kritik aus aristotelischer Sicht*. Universitätsverlag Winter, Heidelberg
- Schmitt, A. (2011). *Denken und Sein bei Platon und Descartes. Kritische Anmerkungen zur, 'Überwindung' der antiken Seinsphilosophie durch die moderne Philosophie des Subjekts*. Universitätsverlag Winter, Studien zur Literatur der Erkenntnis
- Schulz von Thun, F. (2008). *Six Tools for Clear Communication*. The Hamburg Approach in English Language, Schulz von Thun Verlag, Institut für Kommunikation, Hamburg, Germany
- Seamon, D. & Sowers, J. (2008). Place and Placelessness, Edward Relph. *Key Texts in Human Geography*, P. Hubbard, R. Kitchen, & G. Vallentine, eds., London: Sage, 2008, pp. 43-51
- Stendera M. (2015). Being-in-the-world, temporality and autopoiesis. *Parrhesia*. 24:261-284.
- Stendera M. (2016). Enacting productive dialogue: addressing the challenge that non-human cognition poses to collaborations between enactivism and Heideggerian phenomenology. In: Reynolds J, Sebold R, eds. *Phenomenology and Science*. Palgrave MacMillan; 69-85
- Tramonti, F., Giorgi, F., & Fanali, A. (2019). General system theory as a framework for biopsychosocial research and practice in mental health. *Syst Res Behav Sci* 2019; 36: 332–341. <https://doi.org/10.1002/sres.2593>. Special issue on “Ludwig von Bertalanffy: Legacies, traces, reverberations and amplifications commemorating the man and the work 50 years after ‘General System Theory’”
- Warglien, M. & Gärdenfors, P. (2013). Semantics, conceptual spaces, and the meeting of minds. *Synthese*. 190. 1-29. [10.1007/s11229-011-9963-z](https://doi.org/10.1007/s11229-011-9963-z)
- Whitehead, A. N. (1978) *Process and Reality: An Essay in Cosmology*. By Alfred North Whitehead. Corrected edition by David Ray Griffin and Donald W. Sherburne. Free Press, New York
- Whitehead, A. N. (2009) *Process and Reality*, 3. Free Press Corrected Edition, 1978". *Creativity and Its Discontents: The Response to Whitehead's Process and Reality*, edited by Alan Wyk and Michel Weber, Berlin, Boston: De Gruyter, 2009, pp. 107-136. <https://doi.org/10.1515/9783110327854.107>
- Wiehl, R., Holzhey, H., & Rust, A. (1990, 2016). *Natur, Subjektivität, Gott. Zur Prozeßphilosophie Alfred N. Whiteheads* Suhrkamp Taschenbuch Wissenschaft, Suhrkamp Verlag.

