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Configuring a Concept - On Iteration and Infinity

Gisela Bruche-Schulz

Abstract

The question asked in this paper concerns the relation between perception, the senses, and the human faculty of conceptualizing experiential values. I suggest that I came across data that exemplifies the *transition* from the sensing of an Umwelt to a conceptual grasp. The human faculty of conceptualizing experiential values obviously relies on experiential ontologies as a reference system. But the latter does not bring about the conceptualizing. The main question is then: How does conceptualizing work, and what is a concept? Do we know what conceptualizing is like? Do we know what thinking is? Of course, we experience the processual endpoints with words as convenient results. We seem to know how we learn words. Do we also know how we create their meanings? The meanings of *iteration* and *infinity* are in focus here. The passage from iteration to infinity is not defined by words. The distribution of response numbers seems to indicate that there is an underlying *feeling*, or *sensing* that enables, and accompanies, the understanding of a meaning.

Keywords: sensing and feeling, ensuing conceptualizations, the meaning of words
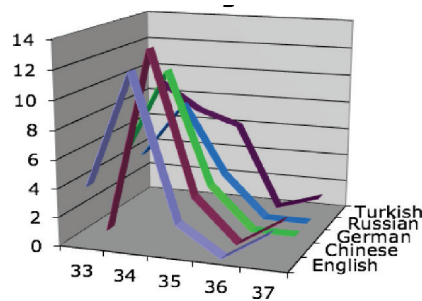
1. Introduction

During a playful reading experiment, five different groups of readers (students) were presented with an excerpt from Saint-Exupéry's *Le Petit Prince* (in five different languages, on different occasions). I introduced the reading event as a playful game and a pastime, and discovered only later that the responses occurred in regular highs and lows.

I asked the students to jot down what came to mind, and I allowed 10 minutes for the task. Never did their responses match with the words written by their fellow students, nor with the drawings and sketches either. However, the response *numbers* matched. The numbers give evidence of perceiving conceptual entities by their distinctively different distribution. The numbers show alignments with different conceptual entities, that is, with different semantic constellations, reflecting, for example, lasting events and states, bounded and unbounded events, speech and thought introducers, also expressions signifying negation, completion of an action, evaluations, and other statements of the forms described in grammars. The grammars of all languages include such concepts and their respective meanings, even though in different formations, in different distributions, and to different degrees.

In the text, that was in focus, there were altogether 44 segments, each signaling one of these core conceptual features. Up to now, I have looked at the types of highs and lows of response numbers highs and lows of response numbers at segments that signal bounded versus unbounded events, and positive versus negative evaluations. As for the present project, I want to find out more about the nature of the *concept of iteration*.

In sum, the above-mentioned five different groups of readers—when reading the text in five different languages, at different times and places—produced *high* response numbers at a textual segment with an *iterative (unbounded) activity*. An example is attached below. The response numbers signal the perception of an iteration without the readers being aware of producing such *numbers*. The task, after handing over the sheets with their responses, was of course the topic of the ensuing conversation. The readers enjoyed telling each other about the kind of 'funny' responses they had given (as sketches or in writing), they also kept wondering about the intentions, the 'wider' meaning of the task (I had promised to tell them 'later'). In the following, it is the segment 34 (of 44) which is in focus.

1.1 Segment 34, iteration: *shimmer* in the *trembling* water—not known when ending

34. and I could see the sunlight shimmer in the still trembling water.	34. 而陽光正在波動的水面上粼粼發光著.	34. (a) und im Wasser, das noch zitterte, 34. (b) sah ich die Sonne zittern.	34. (a) вода в ведре ешё дрожала, 34. (b) и в ней играли солнечные зайчики.	34. ve hâlâ titreşen suda güneşin de titreştiğini görüyordum.

Sensing that my 'mind' is directed to a something, does not produce awareness of my consciousness, but rather of the specific something, here signaling an iteration (*shimmering*, and *trembling*). The question is: What is it that we call a 'mind', and how would a 'mind' conceive what we call 'concepts'? My own immediate problem was and still is: How can the regular up and down of response numbers at segments with particular 'grammatical' concepts be explained? Or to rephrase the question with regard to the present example: What is it that evokes the high response numbers at segment 34—in all five languages!?

The usual assumption is that our concepts come about by an underlying consciousness that responds, through our ability to think, to our experience of the world. In everyday life, we even assume that concepts are given that we use for sorting out things that are relevant to us. But what do we know about this underlying consciousness that 'presents' us with the concepts which we use? How does *it* work? I take it that the response numbers in the above example are, or could be, part of an answer. In other words, if the phenomenon of *iteration* is perceived as a relevant example, would it be possible to find out more about being conscious of the phenomenon of iteration which could help to explain the numbers? So what is a concept?

Dictionary meanings focus on the ability to think in relation to one's experiences, summarized as the faculty of consciousness and thought. When applied to the present problem, the 'feel' of iteration seems to shine through the high numbers—as an expressive means that reflects a sensing accompanied by an intensity that is *not* 'felt' at the preceding and the following segments.

In everyday life, one would probably refer to the effect of happy endings as a good example of elements that excite an emotional effect when reading a story until the end. But that would still not explain the regular numbers of the reader responses at places like, for example, negation (zero to few responses'), iterations, completion of an action, positive evaluations (high response numbers, as aforesaid see [1, 2]). The regular ups and downs of the response numbers tell us that there is *something* to the notion of consciousness, but it is not clear what this *something* really is.

Before I move on to address the latter question, I present statements from grammars of the five languages within which the text of *Le Petit Prince* was read by five different groups of readers. The five languages use different word formations for expressing the phenomenon of iteration. Their grammars show the different grammatical means that are used for making manifest the phenomenon of iteration.

1.2 Iteration: unbounded processes

English	Cantonese	German	Russian	Turkish
progressive	verbal particle *jyuh*	timeless present tense	aspectual layers	progr & habitual
Downing and Locke, 1992, p. 368ff.	Matthews and Yip, 1994, p. 202ff.	Eisenberg, 1989, p. 123 Hentschel and Weydt, 1991, p. 91ff	Isačenko, 1968, p. 416ff	Göksel and Kerslake, 1992, p. 368

In spite of the diversity of the language typologies, the notion of ongoing processes is a semantic key notion shared by all, albeit in different output formats and clusters of aspect formation. All languages describe 'infinity vs. finiteness' as variations of iteration. Iteration may be unending (progressive, habitual), interrupted, completely stopped, or negated as happening at all. The first question related to this phenomenon is: Why do the languages of our world share the grammatical concept of iteration? [3–7].

Up to now, I tried to figure out the possible reasons for the regularities of the ups-and-downs of the numbers in relation to the story structure [1, 2], also as visible from the types of pictorial responses that express/show affective reactions (see [8], on iconic diagrammatic effects). What is of particular interest in this context is the fact that iteration and the hierarchies of iteration are the very fabric of the processual texture of cellular entities. As such, human minds work obviously as offshoots of this texture, that is, as an extension of this procedural type of mirroring life processes, by mirroring them, even though confined to the perspectives of the human species. Below, I present my main questions again:

Sensing that my 'mind' is directed to something, does not produce awareness of my consciousness, but rather of the specific something, here signaling an iteration (*shimmering*, and *trembling*). The question is: What is it that we call a 'mind', and how would such a 'mind' conceive what we call 'concepts'? When trying to find an answer, my immediate problem was and still is: How can the regular up and down of response numbers at segments with particular 'grammatical' concepts be explained? Or to rephrase the question with regard to the present example: What is it that evokes the high response numbers at segment 34—in all five languages!? Below I summarize the main points of my project:

The present paper is my first try at a focus on a 'substance' that underlies the conceptual organization of the world's languages, specifically, the concept of iteration. What gives me a hint is the *non-conscious* responding of the five groups of students who read an excerpt from Saint-Exupérys *Le Petit Prince* (in five different languages).

The five different groups were asked to jot down 'what came to mind' when reading this excerpt in their own (different) languages. Their jottings then revealed highs and lows of response numbers at the same conceptual figurations, thus correlating with the semantics of the grammar that underlies the narrative told by the text.

2. What is a concept: opinions and attempts at explanations

Concepts are categories or groupings of types of experience. In this paper, the concept of *iteration* is in view. This 'concept' is a descriptor for processes, for which both a *processual ending and also the unending* are not determined, is left open by the grammars. Both ways are supposed to exist. The experience of human bodies in temporal space attests to endings to happen. But as previous beliefs in Gods (and today's life sciences) confirm, there are processes that are indeed unending. Apparently, for humans, regardless of which language they speak, there is also a potentially double experience of both bounded and unbounded iterations, generated on the basis of an "inherent kinetic dynamics [i.e.] the experientially grounded affective-cognitional-proprioceptive/tactile-kinesthetic foundations of those dynamics" ([9], p. 36). This inherent kinetic dynamic provides a wealth of experiential input. This experiential input creates variations of sensory qualities and their functions in relation to the needs of a body, for example, structured as right–left-hand functions, and/or as airborne and, incrementally, structure born sounds that develop from tone *signals* (alert, alarm, animosity, also trust, liking, affection, and other emotive underlays) to more and more developed sign systems.

The sign systems that have been developed in the languages of this world, all have the means to communicate—*and to form concepts*—on the basis of the experience of human bodies living in a world that is conceived according to the needs of human bodies. The concepts constructed by human consciousness reflect formative bodily awareness, bodily motivated perceptiveness, and requisite categorizing of experience. "A Martian scientist with no understanding of visual perception could understand the rainbow, or lightning, or clouds as physical phenomena, though he would never be able to understand the human concepts of rainbow, lightning or cloud, or the place these things occupy in our phenomenal world ([10], p. 443)."

2.1 Consciousness: the organization of energy in the brain

Obviously, the *concepts of rainbow*, *lightning*, or *cloud* are grown out of the ability to form them. And what is this ability about? A controversially discussed primary cause is human consciousness as a system that organizes the input of experience and the resulting system of mental processes by building on a neural substrate, in a process of "emergence of conscious mental processing from the neural activity carried by the underlying biochemical principles of brain organization" ([11], p. 1). Is human consciousness then a purely physical phenomenon? In the following, 'energy' is in focus. Is 'energy' a purely physical phenomenon?

> *Evidence from neurobiology indicates that the brain operates on the principle of energetic processing and that a certain organization of energy in the brain, ... can ... reliably predict the presence and level of consciousness. Since energy is causally efficacious in physical systems, it is reasonable to claim that consciousness is in principle caused by energetic activity ... ([12], p. 8)*

The denoting of the conceptual entity of iteration by response numbers, that is, *not* by an awake state of awareness, does speak to a directedness of the organization

of energy in the brain. The verbal input of the text that is read is obviously a source from a feedback system that works on and with words, and *also with the syntactic structure* which organizes the word order.

> *Feedback systems are self-referential: one part of the system casually affects another, which in turn affects the first. Such systems are apt to generate behaviors that are an irreducible property of the system as a whole ([12], p. 7).*

In total, it is obviously the case that the awareness and sensing of particular experiences are being noted at varying levels of consciousness. Feedback systems and energy in the brain should surely be involved. Do these driving factors then solely reflect the organization of energy in the brain? I would want to keep this question unanswered up to the point, at which other aspects have been brought to the fore.

2.2 Consciousness: internal broadcasting

Feedback systems and energy in the brain are surely driving factors of the processes which happen in the brain and the body. The question is whether personal awareness is just a weak offshoot, that is, the end-product of non-conscious processing. The commentary below seems to confirm this latter aspect.

> *The experience of consciousness is a passive accompaniment to the non-conscious processes of internal broadcasting and the creation of the personal narrative. In this sense, personal awareness is analogous to the rainbow which accompanies physical processes in the atmosphere but exerts no influence over them. Though it is an end-product created by non-conscious executive systems, the personal narrative serves the powerful evolutionary function of enabling individuals to communicate (externally broadcast) the contents of internal broadcasting ([13], p. 1).*

Oakley and Halligan further suggest that the sense of agency and self has a role to play in human lives. "We argue, however, that central to the traditional domain of consciousness is a personal narrative created by and within inaccessible, non-conscious brain systems where personal awareness are end-products of widely distributed efficient, non-conscious processing ...." (p. 13). They further suggest that personal awareness "lacks adaptive significance like rainbows or eclipses" (ibidem)

Neither Oakley and Halligan, nor Peperell ascribe an agentive-reflective consciousness function to the brain. They rather stress the non-conscious processing as fundamental to the living with an identity of a self ("with a personal narrative"), the latter as the end-product of a non-conscious processing.

2.3 Conceptual organization, its experiential *substance*, and processual dynamics

In the following, I will refer to authors who attempt to find out about the question of how the self, that is, the end-product of 'non-conscious' processing, comes about. They stress the *qualities* of the first-person perspective, and the *levels of experience*, that allow for actively anchoring words in human communication and thought.

2.3.1 Jose Musacchio: the transparency of experience

Musacchio highlights the difficulty as follows: He suggests that "...the most misleading factor in the understanding the nature of the mind and conscious

processes is the *transparency*[1] of experiences and the imperceptibility of the neuro-biological processes that realize them" ([14], p. 425).

> *Transparency reflects the biological advantages provided to organisms by avoiding the proliferation of superfluous sensing and the regress implied in sensing the sensors and analyzers ad infinitum. The downside of simplicity and the price for biological efficiency is that through introspection, we cannot perceive the inner workings of the brain. Thus, the view from the first person perspective creates the pervasive illusion that the mind is nonphysical. Sensing the environment requires encoding information into neural surrogates, which I conceive as contingent processes that when incorporated into conscious processes become qualitative experiences (ibidem).*

Such qualitative experiences (*qualia*) are also shared by the living beings that we call animals. "Experiences have high biological value, because … they allow [all] organisms to make intelligent choices (ibidem)"

The phylogenetically conserved neural structure that allows for qualitative experiences relies on the information received by the senses, and then on being processed by pathways in the brain. "Colour, motion, depth, shape, contours, distance, etc. are processed in multiple cortical areas" of the brain ([15], p. 72).

We normally perceive bodily experience as very different from thought. When realizing the complexity of the interplay of a body and a functioning brain, the picture changes.

> "[C]onsciousness and the self are neither a thing nor a substance, but a collection of processes, which include sensations, perceptions, and memories. … [C]onsciousness and the self are a collection of dynamic processes, which incorporate not only the current experiences, but also all our current thoughts, memories, and emotional states" ([15], p. 78).

As is obvious, Musacchio's reasoning concretely informs the view that the sign systems, notably the sign systems of the world's languages, are all based on the experiential reality of human bodies. No concept would have been formed if there was not a 'collection' of bodily processes, including 'sensations, perceptions, and memories', firstly, as concrete momentary experiences, and also as chains of experience that are reflected from conceptualized pictorial, verbal, or other sign-system experiences.

The nested and interlaced cellular structures of our bodies, with the brain in the role of an aligner control unit, are the non-conscious resources, the underlay of our consciousness. When describing the cellular interplay with the view to learn more about 'how' we arrive at and 'live' with the experience of being conscious, various authors explore specific ways and stress somewhat different aspects. In the following, I give a summary account of the aspects highlighted by Fuchs [16].

2.3.2 Thomas Fuchs: the body as a point of conversion

Cells, and higher organic units, are the building blocks of organs whose interplay results in the wholeness of an experiencing body, and the brain configures elements of experience "into resonant patterns that form the basis of integral acts of life" ([16], p. 169). The wholeness of this experience is not found inside a body alone. Like bodily processes belong to one processual dynamics (sensations, perceptions,

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[1] my italics

memories), elements of an Umwelt are equally focused on and are also functional for a wholeness of the conscious experience of being in a situation.

> *Let us take the example of an instrumental action such as writing a letter. In order to do so, I pick up a pen that was previously outside my perception, but had already been preconceived by my imagination. It is also suitably shaped for being held by my fingers and has an expected weight. In other words, my lived body already anticipated the pen through its habits and protentions (p. 138).*

The gist of this observation declares an Umwelt as part of the 'personal' consciousness that relies on the input of a processual interplay of the nervous systems of a body. In a similar vein, Fuchs remarks: "There is no 'pure' pain, no 'plain' seeing or hearing. Conscious experience is not put together from components at all; it is, conversely, from components at all; it is conversely, a *primary unified process* or a '*stream of consciousness*', which differentiates into specific activities and achievements according to the particular demands of the situation" (p. 48).

To sum up, Fuchs posits that consciousness is everywhere. It is nourished from all regions of the body, brain, and an Umwelt. What is called the 'mind' is thus not a solitary cellular entity. "[T]he brain as such does indeed not contain more consciousness than, for example, the hands or feet; only as a whole is the living creature conscious, does it perceive or act. (p. 136)" During perceiving and acting, *meaning* plays the role of explicating the directions and purposes of perceiving and acting. Fuchs compares the role played by consciousness to the 'Necker's cube' for explicating the wholeness of the seemingly diverse spectrum of perspectives it can represent. The 'subject' is revealed as embodied, whereby the body is the 'point of conversion'. Fuchs cites Merleau-Ponty, stating that consciousness is "neither mere *consciousness* of the body nor objective *physical body*. (p. 75)" He summarizes: "A person's life acts therefore both exist in an inner and outer sense—they encompass lived experience *and* expressive behavior (p. 82)".

2.3.3 Mark Johnson: continuous nestings of cellular connectivity

Johnson argues for a nondualistic, nonrepresentational view of mind as "a process of organism-environment interactions ([17], p. 117) that relies on neural maps. Higher up the neural-structure chain the organizing structure of experience combines, e.g., perceptual fields by creating image schemata (center-periphery, compulsion, attraction, blockage of movement, "to name but a few aspects of what Leonard Talmy calls 'force dynamics' ([17], p. 137).

> *The bodily logic of such force schemas will give rise to specific inferences that we draw, based on the internal structure of the schemas. For instance, objects move at varying speeds, they move along trajectories, there is a rhythmic flow to their movement, they start and stop, etc. (Johnson, ibidem)*

The cellular processes of human bodies all occur in nested systems, which combine in hierarchies of further overarching nestings, experienced as 'up-down, compulsion, attraction, blockage, scalarity'—thus, reflecting ever-ongoing connectivity of the cellular units of living bodies. With different contexts of everyday life, adapting the needs of the body to the momentarily available resources is an ongoing process. The needs of the body are experienced by variations of 'feelings' that require a response.

> *Because we must continuously monitor our own changing bodily states, we are exquisitely attuned to changes in degree, intensity, and quality of feelings. Such*

> *experiences are the basis for our sense of the scalar intensity of quality ... In other words, because the qualities (e.g. redness, softness, coolness, agitation, sharpness) of our experience vary continuously in intensity, there is a scalar vector that applies to every aspect of our qualitative experience (Johnson, 138).*

There are then various directions of continuous cellular connectivities, usually described as the effects of a 'mind'—in three dimensions: "[Y]ou need a human brain, operating in a living human body, continually interacting with a human environment that is at once physical, social, and cultural. ... no brain, no meaning; no body, no meaning, no environment, no meaning" (p. 155).

3. Scalar fields and the vectors of consciousness

The experience of a self is not possible without the conscious experience of: *I did it, I tried to, next time it might be better because I know now how to do it*. Based on our cellular oneness that derives from various physically nested *intentional* vector spaces, an *ego* comes about through the totality of sensor and control functions from each level of the cellular entities. The process generates an experience that is felt as a resonance system, that is, *feelings* (good feelings: positive resonance, bad feelings: negative resonance). Depending on the good or bad *feeling* (or a neutral one), we influence the directions and the intensity (the 'force') with which the processual docking-on proceeds.

3.1 The hard problem of consciousness: non-commutative structures

Chalmers, who put forward the notion of the 'hard problem of conscious-ness', remarks

> *The really hard problem of consciousness is the problem of experience. When we think and perceive, there is a whir of information-processing, but there is also a subjective aspect. As Nagel [16] has put it, there is something it is like to be a conscious organism. This subjective aspect is experience. When we see, for example we experience visual sensations: the felt quality of redness, the experience of dark and light, the quality of depth in a visual field. ... Then there are bodily sensations... the felt quality of emotion, and the experience of a stream of conscious thought. What unites all of these states is that there is something it is like to be in them. All of them are states of experience (Chalmers, 2011, pp. 31-32)*

In 2018, he asks, "[W]hy are physical pain processes accompanied by the feel-ing of pain?" (p. What we call 'feeling' is a human response to a causative root that is alien to the nature of the cause. In this way, the 'hard' problem of consciousness turns into a 'meta-problem', that is, into a question that does no longer aim at the particular quality of consciousness, but at the question of why there is this epistemic gap between phenomenal and physical factors.

3.2 Quantum concepts and experience

> *Today there is accumulating evidence in the study of consciousness that quantum concepts like complementarity, entanglement, dispersive states, and non-Boolean logic play significant roles in mental processes ... The term "quantum cognition" has been coined to refer to this new area of research. Perhaps a more appropriate characterization would be non-commutative structures in cognition ([18], p. 29).*

What is in focus is, on the one hand, the brain. The brain is the physical place where nested neural structures are active. However, when dealing with consciousness, it is not the brain that is its creator. For consciousness (and a mind) to come to the fore, a totality of the responsivity to an Umwelt is needed. We regard the 'mind' as the creator of—thought, perception, emotion, memory, also imagination, and reason. The neural structures of the brain are needed as the physical *underlay* that supports what the mind is doing (like a bike is needed for riding a bike). Let us look at quantum *concepts* as a further example of the structure of a concept.

The above-mentioned quantum *concepts* have a double-sided bearing. On the one hand, they elaborate the properties of the process that gets the research of the quantum matter going by particular conceptually different aspects. On the other hand, the word *quantum concept* is the instrument used by the speaker who points to the topic that is at play.

Human thinking is afforded the means to reflect on the particular organization of sensing, the ability to reflect on both *what is sensed* just now, and by the faculty of reflecting on the wholeness of the human experience—in short, on the wealth of conceptual experience. What is called thought is the 'space' within which the senses send effects on a body into a 'sunlight' stream of reflective elements. Like the sunlight is not a phenomenon as *we* see it, and the *taste* of sugar is not what the sugar consists of, other phenomena are not what our perceptions say about them either. These relational inadequacies between what we *know* about such phenomena and how we *feel* them are approached by human minds along with the feel of it, and by researching the underlying chemical properties.

> *..., the phenomenal is identical to certain neural processes, even if our perceptions from different perspectives indicate otherwise ([14], p. 423). ...The sweet taste of sugar is not identical to the chemical properties of sugar, even if some of the molecular properties of sugar are what stimulate the tongue receptors for 'sweetness' (p. 442).*

What these chemical properties are and how they operate on the tongue receptors can be approximated through data that are retrieved from data sources which are helpful, but knowing about them does not change the way we feel them.

3.3 Apeiron and other forms of infinity

One form of dealing with the phenomenon of unending was, in the Western World, the belief in Gods, or in *one* (Christian) God. Eastern religions held different views, and the Greek tradition showed that the belief in Gods was not necessarily grounded in the assumption of an unending process. Sieroka (p) refers to Aristotle's remarks on Anaximander's views of the apeiron (ἄπειρον), the unlimited.

> *Obviously, so the argument goes, we are surrounded by countless instances of the natural processes of becoming and declining, animals are born, grow, and die, etc. Hence, there must be a source or 'reservoir' for all these processes and, for the sake of avoiding a vicious regress, this source must be infinite, or rather inexhaustible (pp. 3-4).*

Sieroka continues to say that the ἄπειρον was not only viewed in terms of an inexhaustible source of the power for the generation of things in the world, but also as indeed spatially inexhaustible. The ἄπειρον was thus claimed to be an unlimited causal principle, not being identical with

"any of the four elements" fire, water, earth, and air), "but rather with something 'between' them in the sense of being a source from which the elements originate. ... ἄπειρον is discussed as denoting that which is qualitatively indeterminate. ... [T]his interpretation might be interpreted as based on the assumption that there is a combat of the four elements fire, earth, water, and air, no element is allowed to prevail over the others (for then, contrary to what one observes, those other elements would cease to exist in the world). Hence, the four elements themselves must originate from something that, following the Aristotelian framework, does not share the qualities of being hot or cold, wet or dry—that is, they must originate from something that is qualitatively indeterminate" (p. 4).

As an unlimited causal principle, the assumption is in line with what we know today about cellular processes. Cells, and higher organic units, are the building blocks of organs whose interplay results in the wholeness of an experiencing body, and the brain configures elements of experience "into resonant patters that form the basis of integral acts of life" ([16], p. 169). As shown also by the grammars of the world's languages, human environments allow for the experience of a no end. Other than that, how can it be that all languages possess the means to express the unending of processes, either by developing explicit words for it ('no end') or by aspectual systems that are generated through their grammars. *Infinity* is experienced as an unending going-on in the realm of space (infinity in the sky), of human activity (unending movements, unending new possibilities), of emotive force (kindness, benevolence), and the like.

4. Georg Cantor

Cantor created set theory, which has become a fundamental theory in mathematics. He established the importance of one-to-one correspondence between the members of two sets, defined infinite and well-ordered sets, and proved that the real numbers are more numerous than the natural numbers. In fact, Cantor's method of proof of this theorem implies the existence of an infinity of infinities (infinities of transfinites, i.e., events that have a singular end but go on indefinitely as a process of reproductive sequences and structures).

Cantorian set theory is based on the principles of extension and abstraction. The set B is included in, or is a subset of, a set A (symbolized by $B \subseteq A$) if every element of B is an element of A. So defined, a subset may possibly include all of the elements of A, so that A can be a subset of itself. Furthermore, the empty set, because by definition it has no elements that are not included in other sets, is a subset of every set.

An example of a finite set is the number of cigarettes in a packet of cigarettes. However, an infinite set has no last element. It is not possible to count the elements of an infinite set. The union of two infinite sets is a superset, and the superset is also infinite. Different levels of infinity represent/constitute the transfinite numbers. "Cantor himself showed that there are indefinitely many transfinite numbers beyond C [the number of points on the continuum of a line], for he proved that the set of subsets of a set always is of higher power than the set itself ([19], pp. 634–5)."
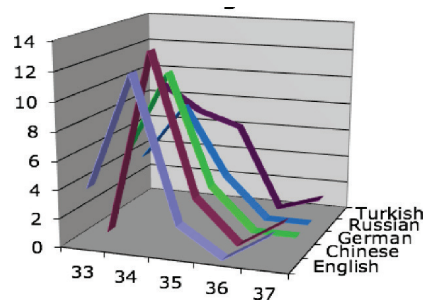
Besides making the infinite to a reality, Cantor [20] postulated that the *Endlichkeit des menschlichen Verstandes* (finiteness of the human mind), as well as of other entities which are experienced by humans as finite, continue to exist in a sequence of iterations by continuously generating the requisite process along an unlimited, stepladder' with different modes („unbegrenzte Stufenleiter von bestimmten Modis" 1883, in 1984: p.73), that is, a sort of a continuous transfer of entities to the next stages. In light of this, he introduced the 'trans-finite' numbers as evolving in an unending sequence of iterations.

The above is somewhat rephrased as follows: In human lives, finiteness is an end-of-life experience. Even though there is the felt and concretely observed finiteness in relation to the *felt* stopping of individual bodies, other than that, all life processes go on. (They are *never* stopping; they trans-gress any felt stopping with an *infinite* going-on, i.e., become transfinite.)

5. Scalar fields, processual dynamics, and apeiron (ἄπειρον)

From the outer view, it looks as if only words are the products of the construction of languages. But a comparison of the language structures betrays something else: The core concepts are all the same. Human bodies all connect in some ways, locally and over time. This processual continuum is reflected in the grammars of all languages. What is shown by the concept of iteration is a psycho-physical responsivity that allows for the experience of living in a human body. That kind of responsivity translates the experience of the world into conceptual visions, including the construction of the concepts of language.

5.1 Segment 34, iteration: *shimmer* in the *trembling* water—not known when ending

| 34. and I could see the sunlight shimmer in the still trembling water. | 34. 而 陽 光 正在 波 動 的 水面 上 粼粼 發 光 著. | 34. (a) und im Wasser, das noch zitterte, 34. (b) sah ich die Sonne zittern. | 34. (a) вода в ведре ещё дрожала, 34. (b) и в ней играли солнечные зайчики. | 34. ve hâlâ titreşen suda güneşin de titreştiğini görüyordum. |

Sensing that my 'mind' is directed to something, does not produce awareness of my consciousness, but rather of the specific something, here signaling an iteration (*shimmering*, and *trembling*). The question of this paper was, and still is: What is it that we call a 'mind'? The response numbers seem to give evidence of some 'background'. But how much does the sensing of background tell us about the 'mind'!?

The usual assumption is that our concepts come about by an underlying consciousness that responds to our experience of the world. In everyday life, we even assume that concepts are given that we use for sorting out things that are relevant to us. But what do we know about this underlying consciousness that 'presents' us with the concepts which we use? I take it that the response numbers in the above example are, or could be, part of an answer. In other words, if the phenomenon of *iteration* is perceived as a relevant example, would it be possible to find out more about being conscious of the phenomenon of iteration which could help to explain the numbers? I take it that the response numbers are themselves a part of an answer to this question because they are manifestations of the body's response as mediated through the nested semiotic systems of 'phenomenal domains' ([21], p. 132).

> *A projection between a phenomenal domain A and phenomenal domain B
> (mental or physical) is not the representation of domain A through B; it is the
> establishment of an ontological correspondence between A and B. More specifically,
> these correspondences primarily involve connections of identity, analogy, similarity,
> causality, change, time, intentionality, space, role, and part-whole, and in some
> cases also of representation (ibidem).*

As for this 'underlying level of this projection between domain A and phenomenal domain B' we still need to know how, by which means, a human mind accomplishes this projection. To say that there is a causal context still needs to show a causal manifestation, to find a link. The key findings (theses) of the authors whose suggestions I summarized in sections 2 and 3 of this paper link the experience of iteration to bodily properties (cellular, cellular-plus-umwelt), and to phenomena concerning infinite experiences (processual infinity, quantum concepts, apeiron-ἄπειρον as an unlimited causal principle). In Section 4, I gave a glimpse of how Georg Cantor reflected on the concept of infinity—transfinite numbers (endings with a continuous/infinite reproduction), and infinity (the unlimited stepladder of the transfinites).

6. Concluding remarks

Phenomenal domains are one thing, but then we still want to know *how* we come to know about them.

> *... semiosis is the transformation of energy into signs, relatively stable spatio-temporal units occurring with particular orders of matter energy configurations. These orders are systems of knowledge and of molecular organization as well; they are organized codal actions (of codification of energy) that provide both continuity of knowledge and transformation of energy ([21], p. 92).*

For Peirce, there was no doubt that a 'gob of protoplasm', say an amoeba or a slime mold, *feels*, and that feeling has a substantial spatial extension which is subjective ([22], p. 90). A Martian scientist, having probably a bodily constitution very different from that of humans, would place her/his experience of the world in a very different conceptual context.

> *"A Martian scientist with no understanding of visual perception could understand the rainbow, or lightning, or clouds as physical phenomena, though he would never be able to understand the human concepts of rainbow, lightning or cloud, or the place these things occupy in our phenomenal world ([10], p. 443)."*

The body is "an integral component of the way we think" ([21], p. 80). As is shown in the example of the response numbers that came about when the five groups of readers were asked to 'jot down what comes to mind', we deal with numbers that highlight the phenomenon of *iteration* as expressed in the language forms of five different languages. The persons who produce the jottings are not aware of this background. There is no reasoned conceptualization of the phenomenon of iteration that achieves the telling *numbers*. It is the placing of the responses, and their numbers, that signal the phenomenon of *iteration*, that is, a nonconscious awareness of the conceptual perception. For the observer, there are just the telling numbers that select the phenomenon of iteration as a focus of attention.

The five languages—among many other types of the givenness of reality—give evidence of an experienced ongoing processuality as 'encyphered' in human bodies and expressed in languages as various conceptualizations of iterations in the grammars of languages.

Cantor's "Punktmannigfaltigkeiten" (set(s) of points) correspond to and conceptualize the variations of the "ongoingness... and location in time" as described in the grammars of the world's languages ([23], 155; in Filipovič and Jaszcolt, 2012). Cantor developed set theory, describing the various properties and intersections of finite and infinite sets. Such properties and intersections have become the accessible qualities of sets. As for the process of creating a concept, here the concept of iteration, a number of experiential pathways have been suggested—energy in the brain, cellular connectivity, quantum concepts, the experience of unlimited connectivity (fire, water, earth, and air; ἄπειρον). However, the question remains how the world of the senses *is channeled into the experience of a concept* when motivating the response numbers. "Material engagement is the synergistic process by which, out of brains, bodies, and things, mind emerges" ([21], p. 32). The approaches which play a role in this paper all provide aspects of this 'synergistic process'. It is this synergy of factors and forces, which forms the background for creating a concept.

So far, what can be said is this: The experience of a concept is a restatement of a felt sensing that confirms something. "A *feeling* forced upon the mind ... [is] strongly suggestive of thought" ([24], p. 23).

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