sersfeld's being/knowing distinction can be held at the first level without a meta-level ontological commitment to an external/internal dualism. Instead, a meta-level epistemological claim should be made that certain theories understand items of reality as ontological whereas others understand them as epistemological. This also seems to echo Werner's point that in PL, a difference between "x qua x" and "x qua perceived" does not imply placing them into an "external"/"internal" distinction (insofar as the two can be explained in PL in terms of potentiality and actuality rather than mind-dependence).

« 9 » Finally, a possible objection will be discussed. Given that at the meta-level, I have drawn a distinction between epistemological and ontological issues, it might be claimed that a third level should have to be introduced where this distinction could be made, and so on ad infinitum. But I am happy to throw away my ladder after I have climbed up on it. I do not need to make a distinction between meta-level epistemology and meta-level ontology once it has been clarified that a first-level distinction between epistemology and ontology need not necessarily be an ontological meta-level thesis on the ground that it could also be epistemological. This is sufficient for warranting that no ontological internal/external distinction should have to occur at the meta-level thesis about the distinction between first-level ontology and first-level epistemology. I gladly accept in Werner's spirit that at the meta-level, all claims are inseparably epistemological and ontological at the same time, insofar as it has been clarified that one of these claims, which I have called the distinction thesis, claims that at the first level, there is (to be seen) a sharp distinction between ontological and epistemological theories but not for DL-implied meta-level ontological reasons such as an internal/external dualism. These reasons might be seen as epistemological or epistemological-and-ontological, as in PL, but they should definitely not to be taken as purely DL-ontological. Were they to be developed to a sufficient level, they would be presumably sufficient for the realist and the constructivist finally to let each other work on their preferred fields rather than fighting for territories they do not necessarily need in order to achieve their own goals.

Acknowledgement

The financial support of the Hungarian Scientific Research Fund (OTKA K-109456 and OTKA K-116191) is acknowledged.

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Received: 7 October 2015
Accepted: 15 October 2015

Opening Spatial Preunderstandings at the Roots of Constructivism

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> Upshot • Key aspects of Werner's concerns involve overcoming dualisms. This presupposes an implicit spatial preunderstanding that is neglected in Werner and needs amplification. Diametric and concentric spatial-relational frames for cognition and perception offer a supporting framework for Werner's interrogation of constructivist roots, to go beyond Cartesian metaphysics and to concretise difference that is not mere dualistic separation.

« 1 » Key limbs of Konrad Werner's search for the metaphysical roots of constructivism are a concern to shed, or at least reconstruct, aspects of a perceived Cartesian (and Lockean) metaphysics generally, and to develop overcoming of dualism in von Ernst Glasersfeld's radical constructivism further. Without necessarily echoing Werner's further steps to construct a PL- (Platonic-Leibnizian) metaphysics, it is these initial limbs that require further consideration, through amplifying a neglected aspect in Werner's argument, namely, the role of space in the conceptual roots of radical constructivism. Given Werner's concerns with perception, it is somewhat surprising that spatial preconditions for constructivism were not given more attention in his target article. This response seeks to highlight a particular spatial-relational preunderstanding, both to challenge Cartesian metaphysics and to relate it to preunderstandings in von Glasersfeld's radical constructivism and Werner's concerns regarding this task.

« 2 » At the outset, it is to be recognised that a Cartesian metaphysics treats space as passive and inconsequential; Descartes referred to "empty space, which almost everyone is convinced is mere nonentity" (Descartes 1954: 200). Challenge to a Cartesian metaphysics needs to reanimate space. It is worth noting that in his consideration of space and identity, von Glasersfeld (1984b) draws much inspiration from the work of William James. This particular passage of James, though not directly quoted by von Glasersfeld, also brings to the fore a notion of a dynamic spatial background as a "river":

> "Traditional psychology talks like one who should say a river [stream of association] consists of nothing but pailsful, spoonsful, quartpotsful, barrelsful and other moulded forms of water. Even were the pails and the pots all actually standing in the stream, still between them the free water would continue to flow. It is just this free water of consciousness that psychologists resolutely overlook." (James 1890: 255)

« 3 » Within cognitive psychology, Ulric Neisser acknowledged that space itself was a concept that could be problematised in the realm of perception: "Space is another cognitive dimension which is important but not as 'primitive' as is sometimes supposed" (Neisser 1967: 291). Neisser problematised it from a constructivist approach to perception: "Position on the retina is an important source of stimulus information, but it is not directly represented by a position in cognitively elaborated space" (ibid: 292). This view implicitly echoed that of Jean Piaget & Bärbel Inhelder, who argued that passive Euclidean space was a developmental construction in a child's capacity for perception and representation, observing that drawings of children aged on average 3.6–4 years revealed that "Euclidean relationships [were…] completely ignored" (Piaget & Inhelder 1956: 52). They criticised a position that is "confused after the manner of

Figure 1 • Diametric dualism.

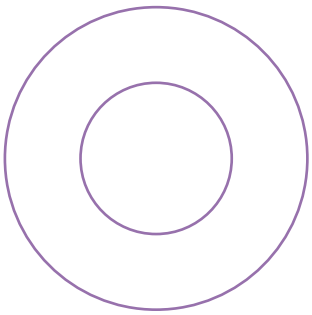

Figure 2 • Concentric dualism.

elementary text-book authors who start out by treating distances and simple euclidean figures as if they constituted real "elements" in the construction of space" (ibid: 45).

« 4 » The focus for current purposes needs to consider a dynamic space at a prior level, not only as a constituent element of perception, but as a prior relational precondition for constructivist processes, whether this is treated at a metaphysical level, an ontological one or otherwise. This blind spot in understanding of "a kind of invisible space" (Luhmann 1995: 25) requires acceleration of focus on a specifically spatial excavation.

« 5 » A key concern of Werner is not only to challenge traditional Cartesian splits between inner and outer but also to allow for a mode of conceptualizing that allows for distinctions that are not "true walls" or "iron curtains" (§24). Werner aptly recognises the need to go beyond a "sharp separation of mind and world" (§68). Werner seeks prior roots of a monism of identity where "*neither separation nor simple identification of them is adequate*" (§47, italics in original). This resonates with von Glasersfeld's interrogation of space, time and identity, where he seeks an understanding of a relation of difference in spatial and temporal terms, stating "the construction of the concept of change requires a judgment of 'different' with regard to the two experiential items that are considered to be one and the same in the sense of different identity" (Glasersfeld 1984b: 7). What needs further emphasis here is not only that a relation of identity-cum-difference is possible but that this can be conceptualised in concrete spatial terms.

« 6 » These concrete spatial terms can be understood as contrasts between diametric spatial structured projections and concentric spaces. Building on Claude Lévi-Strauss (1963, 1973), a diametric dualistic spatial structure is one where a circle is split in half by a line that is its diameter, or where a square or rectangle is similarly divided into two equal halves (Figure 1). In a concentric dualistic spatial structure, one circle is inscribed in another larger circle (or square); in pure form, the circles share a common central point (Figure 2).

« 7 » A key distinguishing feature of concentric and diametric structures, observed by Lévi-Strauss, is that they tend to co-exist in "functional relation" (Lévi-Strauss 1973: 73) and not simply in isolation. They are structures of relation as part of a system of relations. Being mutually interactive, at least potentially, Lévi-Strauss recognizes that they are fundamentally interlinked, so that an increase in one is compensated for by decrease in the other; they coexist in dynamic tension.

« 8 » A key entailment of relative differences between diametric and concentric spaces is ascertainable in principle. It is evident that the inner and outer poles of concentric space are fundamentally attached to each other, unlike in diametric space; both concentric poles coexist in the same space, and thus, the outer circle overlaps the space of the inner one. The outer circle surrounds and contains the inner circle. The opposite that is within the outer circle or shape cannot detach itself from being within this outer shape. Similarly, notwithstanding that the outer circle or shape can move in the direction of greater detachment from the inner circle, it cannot, in principle, fully detach itself from the inner circle in concentric relation (even if the inner circle becomes an increasingly smaller proportion of the outer).

« 9 » In contradistinction, in diametric space, both oppositional realms are basically detached and can be further smoothly detached from the other. These conclusions operate for both structures, whether they are viewed as being two-dimensional or three-dimensional. A concentric space assumes connection between its parts and any separation is on the basis of assumed connection, whereas diametric space assumes separation and any connection between the parts is on the basis of this assumed separation. As structures in relational difference, this contrast is a relativistic one of degree. Concentric and diametric spaces thus can be seen to offer contrasting structures of differential relation. Lévi-Strauss (1963, 1973) observed these contrasting cross-cultural spatial structures as interacting; however, he overlooked this key contrast between these spaces in relation to assumed connection and separation (Downes 2012).

« 10 » Concentric relation offers a model of distinction between poles, nevertheless held in a relation of assumed connection; this relational space transcends a diametric oppositional space of assumed separation, as well as a collapse into a monistic dimension of pure identity. Werner can be understood as seeking to dismantle, or at least reconstruct, the iron curtain and true walls of diametric space. Concentric space can be interpreted as a spatial relational *system* in interaction with diametric space (Downes 2015).

« 11 » Such a spatial preunderstanding with regard to relation and division is further relevant to radical constructivism, as it provides contrasting framing modes of relation to underpin various cognitive constructions. As an illustrative example, explored in more detail elsewhere (Downes 2012, 2015), Carol Gilligan's (1982) moral reasoning processes in contrasting modes of ethic of care and logic of justice are reliant on implicitly spatial preconditions framing these different modes.

« 12 » Gilligan contrasts two eleven-year-old children's modes of relation:

> "To Jake, responsibility means *not doing* what he wants because he is thinking of others; to Amy, it means *doing* what others are counting on her to do regardless of what she herself wants … she, assuming connection, begins to explore the parameters of separation, while he, assuming separation, begins to explore the parameters of connection." (Gilligan 1982: 38, italics in original)

« 13 » These assumptions of separation and connection provide an illustrative example of the relative differences between diametric and concentric spaces as spatial frames for cognition. Diametric and concentric structures are necessary spatial-relational conditions for framing the two different constructions of Gilligan's moral reasoning process. These spatial preunderstandings go beyond binary splits such as mind / body, where distinction can be recognised without being division or reduction to monistic relations of identity.

« 14 » These proposed diametric and concentric spaces are argued elsewhere to be precognitive frames for understanding, relational horizons within which cognition is shaped (Downes 2012, 2015), pertaining directly also to perception in Jakob von Uexküll's *Umwelt* (Downes 2010b), sought by Werner (§64). A related argument is that much of the information processing paradigm of cognitive science is trapped by Cartesian-Newtonian spatial assumptions of passive space as mere non-entity, including in understandings of schema-based explanations (Downes 2010a) and Alan Newell and Herbert Simon's problem-solver computational models (Downes 2006, 2010a, 2010c). A wider argument for the importance of diametric and concentric spaces seeks also to challenge traditional understandings of metaphysics (Downes 2012, 2013), so interrogation of prior spatial preconditions for understanding may need to go further than being rooted in metaphysical assumptions.

« 15 » Other entailments of the relative differences between concentric and diametric spaces than assumed connection and assumed separation include those highlighted by Lévi-Strauss (1963, 1973). These are diametric structures as mirror-image inverted symmetry and relative closure of non-interaction between foreground and background; in contrast, concentric spatial relations offer symmetry as unity rather than inversion (Downes 2012) and a more open structure with background rather than diametric spaces.

« 16 » Werner cites von Glasersfeld (1991) on the need to challenge categories of space and time as objective realities (§18). Diametric and concentric spaces are argued to be irreducible to simple subjectivism or objectivism (Downes 2012); moreover, they do not hinge on Lévi-Strauss's structuralist commitments (Downes 2012, 2013). This invites a wider discussion about metaphysical understandings of truth locked into subjectivist-objectivist frames of understanding (Downes 2012).

« 17 » Werner's questioning of the roots of radical constructivism, to seek pathways removed from remnants of Cartesian metaphysics, is to be welcomed. These aspects of his argument can gain support through this spatial questioning of prior background diametric and concentric structures of relation that frame cognitive constructs, as prior spatial preconditions as constructions for both thinking and perception.

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Received: 12 October 2015
Accepted: 15 October 2015

Transcendentalism Guarding Constructivism: The PL-Metaphysics of Hegel and Naturalists

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> Upshot • I expand the notion of PL-metaphysics by introducing the approach of Hegel, who I regard as the chief PL-metaphysician. Also, I propose another substantiation of the division of metaphysics, namely, the criterion of the transparency / opacity of system settings, which I consider the most symptomatic for the differentiation of epistemologies, and believe plays the key role in understanding the status of constructivism itself. By applying this criterion, we can differentiate transcendentalism and naturalism as two substantial epistemological meta-programs and show that constructivism will still remain a part of the transcendental program, even when there is an orientation towards PL-metaphysics, while Hegel's version of PL-metaphysics will be considered a part of naturalism.

> *"Subjectivism can be overcome only by the most consistent and all-embracing subjectivism (the transcendental)."*
> *(Edmund Husserl 1962: 253f)*

« 1 » There is no doubt that in his target article, Konrad Werner conducted important research, the results of which can assist the endless disputes between realists and constructivists to make progress, showing the fly how to exit the bottle (to use Ludwig Wittgenstein's well-known metaphor from 1953).

« 2 » Here I focus on the definition of ontology (Werner prefers the term "metaphysics"), which can be considered quite helpful for the discussion of problems of perception in the framework of epistemic constructivism. When contrasting PL- and DL-metaphysics, Werner apparently assumes that the former has advantages over the latter, which, constituting a basis for various kinds of dualisms, has created more problems than offered solutions. Indeed, PL-metaphysics ultimately looks very promising as far as epistemic optimism is concerned, while DL–metaphysics sooner or later leads to epistemic pessimism.

The disappearing subject

« 3 » It is quite understandable why the subject–object paradigm was in need of revision: despite its apparent simplicity, this model is known to have many paradoxes. For example, if we were to analyze the classical philosophical definition of reality, we would discover a surprising paradox. Reality is defined in such a way that it does not depend on the subject by definition. But in such a case, the subject does not depend on reality either and does not belong to it. Which in turn means: the subject is unreal. As soon as we separate reality from the subject (and this is what classical metaphysics does), the subject vanishes.

« 4 » However, following Werner's logic, this method is not typical of the entire meta-