Epistemology Returns to Its Roots

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Purpose: Understanding the place of Ernst von Glasersfeld’s Radical Constructivism (RC), and some of its implications, in the development of epistemology. Design: Characterization of two main options for the content of “knowledge” (without and with belief in mind-independent structures), sketch of their history in occidental thought; comparison of their properties concerning subjectivity, objectivity, second-order cybernetics, reliability of mental tools, and the needs and mechanisms for certainty and overall structures. Results: Awareness that we structure mental working tools can, as RC suggests, replace belief in mind-independent reality, and this change dissolves the conceptual problem of metaphysics-ontology, but also eliminates the certainty expected from it, which raises the possibility of relativism. Working-concepts cannot be deconstructed because they imply no ontological claims. Subject(s) are necessarily included in all knowledge (which does not mean solipsism): because subjective experience encompasses all mental tools, including those of objectivity and mathematics, while in contrast the subject itself cannot become an objective system. Practical reliability of mental tools differs from subjective certainty, which requires an ontological leap of faith to positive beliefs: for specific tools including automata, and for positive holistic structures. However, in agreement with the constructivist view, holistic views can instead have an unstructured center, with reliability = viability, which prevents relativism. In sum, belief in mid-independent reality is needed for certainty if desired; for all other purposes constructivism is more helpful. Implications: The change in view suggested by von Glasersfeld’s work is of relevance for a number of fields of study with conceptual problems (such as the mind-brain relation). However, due to their generality, the implications will need evaluation in specific instances. The question of certainty needs attention for practical reasons. Key Words: Subject-inclusiveness, cybernetics, back-up function.

Introduction

Ernst von Glasersfeld (2005, p. 10) wants to go to the roots of epistemology, of “the problems of knowledge and knowing” (Glasersfeld 1995, p. 1), by examining the subjects’ elementary operations for structuring experience. He replaces the ontology of Western philosophy by a “functional fit” (or “viability”) of concepts. He sees his work as indebted to that of von Uexküll, Piaget (Glasersfeld 1995, Ch. 3), Bridgman, Ceccato, von Foerster, Maturana, Varela, and others; it is also in accordance with earlier studies, for instance by Vico, Berkeley, Bentham, the critical and posthumous work of Kant (1936; Glasersfeld 1985a, pp. 18ff; 1991, [5]; 1995). As Riegler (2005) points out, there is a plurality of constructivisms with a common basis; the field is developing and presents conceptual and practical opportunities and challenges.

I became aware of epistemological Radical Constructivism (RC) in 1999, while searching to access the mind–brain relation puzzle, and was glad to find authors who wanted an epistemology without traditional metaphysics, which coincided with my need. They have made this effort a central feature of their work. As von Glasersfeld has pointed out, much of what one can say about these matters has been said before— it may now be a question of clarifying one’s thinking, of seeing the wood for the trees.

Here I want to contribute (from my point of view1) to the understanding of von Glasersfeld’s work, and constructivism in general, in the context of the development of epistemology. My aim is not to repeat his historical surveys (such as Glasersfeld 1995, Ch. 2), but to evaluate his work, and some of what I think is implied in it, within this development, elaborating on aspects which have struck me as important. This is my personal bias; I have also included a few of my own ideas for discussion.

A. Knowledge: Two options in occidental thought

Epistemology has as main purposes to develop and strengthen our stance (episthantai = stand above; under-stand = stand below; ver-stehen = stand in front of); and to get a handle or grip (com-prehend, grasp, can; be-greifen, er-kennen, können). Of and on what? There are two main possibilities for this largely language-determined functional layer of “knowledge,” which influences perception and action in addition to the genetic-instinctual layer:

(i) The constructivist option of using working-entities (working-structures),2 in principle ad-hoc and temporary, structured within otherwise not-structured experience (of mind-and-world) and invested with trust; and

(ii) the traditional metaphysical-ontological option of postulating pre-structured, persistent, and usually also mind-independent, and indeed mind-exclusive, reality (MIR) and truth.

The metaphysics puzzle

Many people prefer the pre-structured option (ii), in the belief that it provides an outside source of certainty; however, it implies transcending one’s experience to an imagined mind-independent source. This is a form of wishful thinking: before it can provide certainty, one must first postulate the MIR-source, and then certify it as real or true by a leap of faith. In the words of Heinz von Foerster: “Objectivity is a subject’s delusion that observing can be done without him. Involving objectivity is abrogating responsibility – hence its popularity.” (Glasersfeld 1995, p. 149). It implies an inversion of thinking,3 in which agency, including goal-setting, is displaced from the subject onto postulated external entities, a circular procedure which actually reduces option (ii) to option (i). But view (ii) is commonly maintained by excluding the circularity from awareness, and often...
also the outward leap of faith. This has a long history.³

Pre-Socratic thinkers did not share a common opinion on the question of whether reality needs our structuring or is found pre-structured (see also Glasersfeld 1985a, pp. 24ff; 1995, Ch. 2). A long-term commitment to option (ii) was the result of the metaphysical-ontological teachings of Plato and Aristotle of pre-existing but inaccessible truth and reality. This required an ontological leap-of-faith, and became a leading theme of occidental thought, transmitted from the Greeks to Arabic, scholastic-theistic, and later to naturalistic epistemology. It helped to achieve stability and collective unity of structured thinking, secured by faith in a postulated mind-external certainty, for about 1500 years. The price was incomprehensibility, particularly when there was an attempt to include the central subjective and holistic aspects of mind (cf. Glasersfeld 1991, [5]; 2001, [41]; and part J of this paper). The postulated MIR structures get in the way of critical thinking.

Still, modern science originated from here; but the leap-of-faith procedure was largely maintained, and merely transferred from MIR-God to MIR-Nature. Correction was therefore difficult even after science became independent of theism, and relapses into some type of MIR-belief resulted almost invariably, including by those who set out explicitly to abandon metaphysics (cf. Glasersfeld 1995, pp. 25ff). The ontological subject-object split persisted, because it was not clearly changed into a pragmatic one, and thus the desire for MI-certainty (ii) continued (cf. Glasersfeld 1991, [16]).

Post-Cartesian (enlightenment) epistemologies were largely motivated as efforts to overcome such obstacles to the correction, but the attempts remained incomplete,⁴ and some thinkers missed even that incomplete change. The so-called “Copernican Revolution” of Kant (who showed that the subject’s activity is needed for objective reality) was ignored or denied by many realists. Attempts were often made (e.g., by logical positivists) to eliminate metaphysics, for instance by declaring metaphysical questions to be meaningless, or pseudo-problems. But this missed the point that something similar is needed for thinking, as Kant had observed. Everyone uses metaphysics-ontology.

The obstructive nature of MIR-belief is illustrated by the fact that even those very bright people who used it as the basis of their thinking (and implied it to be the general basis of thought) were stymied by their wish to exclude the subject in studies that included the mind. At the present late stage of the revision, we are trying to re-gain access to the original structuring process (i) within experience, and to make it work reliably when confronting uncertainty and ambiguity.

B. Radical constructivism

Von Glasersfeld’s work comes in at this point. He proposes replacing the search for postulated already-structured MIR-entities (ii) by showing that structures are results of human activity (i). This change has re-opened the way for studies of basic structures. “Re-presentations” point not to mind-independent entities but to structures previously formed within experience. A typical example is the construction of the concept of plural (the “awareness of having recognized [an item] more than once”; Glasersfeld 1985b [19]ff; 1995, pp. 93f).

RC replaces metaphysics-ontology by “viability” of mind-and-world structures (a “tremendous shock for believers in representation”; Glasersfeld 1995, p. 14). This means being aware of the subject-inclusive operational origin of concepts, and reflects the needs of various scientific and practical disciplines (such as linguistics, mathematics, education); it gives RC a broader than purely philosophical base. Constructivism is “a method for knowing” (Glasersfeld 1995, p. 22); it requires a continuous effort of structuring and testing. Constructivism means more responsibility (Glasersfeld 1985a, p. 27; 1991, [37]), both individual and collective. It means creating working-structures as needed; MIR-assumptions are redundant. An epistemological view cannot be the result of empirical findings, the latter already pre-suppose an opinion on where the structures in experience come from. “[T]he theory
C. Working metaphysics-ontology

To address the metaphysics difficulty more directly, one can go a step further by generalizing from the well-accepted scientific method of creating working-hypotheses: to “operational” or “working-” (or “as-if”-) metaphysics-ontology (working-reality and truth). Re-interpreting inaccessible type (ii) mind-independent metaphysics-ontology as a type (i) working-tool gives it a status like that of the language- and number-tools; the metaphysics puzzle dissolves. But the certainty expected from type (ii) ontology-meta-physics is not the same as “social construction, although both have points in common (Glaserfeld 1995, p. 141). Most concepts are socially shared, and dealing with social questions pre-supposes an epistemological point of view.

Deconstruction-proofing, and back-up versus MIR-fallback

Working-structures cannot be deconstructed ontologically (in the sense of Heidegger and Derrida) because they claim no ontic (pre-structured) base.

This enables the constructivist method to back up type (ii) views, which can be de-constructed (for instance by showing that the notion of fictitious inaccessible MIRs is not needed for them, since they are extrapolated from mental tools). This back-up function (that is, the working-structure is used to replace the abandoned MIR-structure) might be a useful conceptual tool, for instance in scientific theory-building.

Since (ii) cannot back up (i), the relation between (i) and (ii) is asymmetrical. While backing-up or replacing (ii) by (i) serves conceptual clarification, a move from (i) to (ii) is a fall-back – by default and/or by design – from responsible agency onto assumed mind-independent certainty provided by postulated guarantors.

The number of possible practical action patterns is increased in working-ontology: they are created as needed rather than determined by fixed dogmatas that pre-determine and restrict the choice.

Working-science

MIR-science (type (ii)) can be transformed to working- (or as-if-) MIR-science (type (i)). Science neither needs, nor can it produce, traditional metaphysics-ontology. “Science is the collection of recipes and procedures that always work […] Our faith [in it] rests entirely on the certainty of reproducing or seeing again a certain phenomenon by means of certain well-defined acts” (Paul Valéry, quoted by von Glaserfeld 1995, p. 117).

The physicist Percy Bridgman proposed (1927), like Piaget, that all concepts result from subjects’ operations: however, he still talked about external nature, though he had “little to say about it,” and added “what this means we leave to the metaphysician to decide.” von Glaserfeld wrote that he is agnostic about a mind-external reality (1991 abstract, [17]ff; 1995; etc.). It may be more consistent, I want to suggest, to define reality-structures (ontology-metaphysics) in principle as ad-hoc working-tools only, even if they are used on a permanent basis (Note 1 and part C, above). Like words, numbers, triangles, and dimensions, they are there because we need and structure, posit, and use them: that solves the puzzle. Assumption of things-in-themselves that cannot be proved or disproved is redundant.

D. The encompassing: Subject-inclusiveness is fundamental

The inclusion of subjective experience in all knowledge is a central aspect of constructivism (but does not imply solipsism = exclusive subjectivity without objectivity). “All cognitive activity occurs within the experience of goal-directed consciousness” (Glaserfeld 1985a, p. 31; but in principle at least one needs to include all aspects of experience; see below). There is no way of getting out of subjectivity, either individually or collectively: the subject is an intrinsic component of all mental structures, such as concepts and theories. This is, in my understanding, a defining aspect of constructivism, and needs to be kept at the center of efforts to deal with it.

In theories that exclude the mind (such as type (ii) exclusive objectivity) the subject(s) are likely to re-surface at some point. Examples are the ad-hoc addition of “consciousness” in particle physics, or the “anthropic principle” in cosmology. But subject(s) must be included from the outset. If they are added to a type (ii) view at a later time, as in these instances, a return to a type (i) view is needed in order to deal with an aura of artificiality and an ontological subject-object split.

This subject-aspect of experience too has had a historical development in epistemology: in phenomenology and related efforts.
E. The subject is not observable

The subjective aspect of experience (or consciousness) has “to remain empirically inscrutable”; it cannot become objective because “the reflecting self [...] becomes the governor and cannot contemplate itself from the outside” as an object (Glaserfeld 2001, [32]). There is no subject in exclusively-objective studies. The unobservability of the subject is a fundamental fact which is in principle recognized in constructivism, but usually neglected in MIR-views. This point will need consideration in the discussion of “second-order cybernetics” (below).

The mind-brain question cannot be approached by MIR-views, because mind cannot be made into an object; as von Glaserfeld puts it (2001, [41]): “In order to do that [understand consciousness objectively], I would have to step out of [consciousness], and at the same time remain conscious, in order to face my own consciousness.” Brain function studies take place within the encompassing mind but cannot in turn reach the mind. This does not mean that objective studies have no value, quite the opposite; but it means that subjective experience is primary.

The relation of objective studies (for instance of brain function, or of quantum physics) to subjective experience (consciousness, observer, mind) is asymptotic, not one of identity (notions like “the embodied mind” or “the mind-brain” attempt to render the mind objective and thus imply a misunderstanding of this relationship). Objective functions can approach but not reach subjectivity, and in contrast to geometry, the difference cannot be neglected without eliminating ourselves, as happens in MIR-views. Words can become MIR-objects (for instance as elements of grammar and syntax, in printed form, etc.), and word-concepts too, but the ongoing experience which they express cannot.

To accommodate experience, scientists must acknowledge that all working-structures (and the distinctions between them) happen within mind or experience; keeping experience at the center, without solipsism. When maintaining this awareness, one can safely alternate between working-objectivity, working-idealism, working-subjectivity, etc.

The inverted thinking of MIR-belief is a typically human problem. Animals too structure their own worlds (see Horvath 1997), but the human capacity for distancing (reflection) is greater, in part related to language use, i.e., the large-scale association of specific communicable sounds to images (Glaserfeld 1995, Ch. 7; a classical example is Archimedes, who was so distant from events around him that he did not notice that a Roman soldier was going to kill him while he reflected on geometric problems).

The aim of the objective method is to eliminate observer-bias, not the observer.
as needed while (or after) I have various subjective experiences.7 (In contrast there are many “autonomous” biological systems, including bee-hives and ant-colonies, that can be objectively studied but do not imply “subjectivity” or “consciousness” in the sense of the present discussion.)

One may compare these efforts with the earlier one of John von Neumann (cf. Baggott 2004, p. 243), who found that to understand the statistical nature of quantum-mechanics (QM) he had to re-introduce the subject into QM, in terms of a “system III” (observer or “consciousness”) in addition to system I, the object under study, and system II, the measuring device. But system III is not identical with, nor a part of, system II, and he concluded that “the probability wave collapses when it interacts with a consciousness.” An opaque conclusion of this type may follow if one starts from naturalistic MIR-belief (that exclusive objectivity describes “the reality”); but since it is not comprehensible, it has not made QM understandable. The word “consciousness” not withstanding, the “system III” is likely to be understood in MIR-terms, because systems are objects of thinking. The difficulties persist in that field (quite “officially” in expressions like “quantum weirdness” – uncertainty, wave-particle duality, Schrödinger’s cat, etc. –; cf. for instance Lindley 1996; constructivists might counter that the weird aspect is the MIR-view; see also the section on gestalt-tools, below).

The same conceptual difficulty emerges in second-order cybernetics and might interfere with its acceptance. Experience is primary, theories and observations occur within it. The problem is the incomprehensibility of MIR-belief (objectivity) itself, which von Neumann retained because he did not explicitly abandon it, and which is also implied in studies of cybernetic systems.

G. Reliability of mental tools

With the change from type (ii) to type (i) epistemology, the questions of reliability and certainty become prominent, since the postulated external guarantor dissolves. Ernst von Glasersfeld has presented descriptions of how some mental tools are created, and of their properties. Since mental structures are the nuts and bolts of mental function, I will briefly discuss a few of them here, following von Glasersfeld’s procedures, with emphasis on the question of their reliability.

Regularities, laws, and the method of reason

Outside of religion and politics, certainty refers mostly to natural laws (“regularities” in nature), which we experience and structure, in the same way as object-constancy in subject-inclusive operations (Glasersfeld 1985a, pp. 31ff; Glasersfeld 1995, p. 128). Natural laws are reliable, not dependent on MIR-theistic beliefs, and are commonly believed to result from type (ii) MIR. But it turns out that they can be modified when needed; this shows them to be type (i) as-if-MIR laws.

After abandoning MIR-ontology, it remains that “only reason can protect man from fanaticism and superstition” (Kant). Reason still means clarification of thinking, sorting out helpful from unhelpful mental structures. The reasoning method “de-constructs” non-viable structures and makes us look for better ones. – As von Glasersfeld has mentioned, Kant himself came close to a type (i) view in his opus postumum. Related to this question is von Glasersfeld’s work on the operational analysis of the basic steps in mathematics and abstraction.

Arithmetic tools

In a recently “revisited” study, von Glasersfeld (1995, Ch. 5, Ch. 9; 2006) discussed the operational foundations of structures in arithmetic. After structuring the concept of “plural” (see part B, above), a simple arithmetical statement like 3 + 4 = 7 can be “unpacked” into the operations of counting two collections of items. Then by coordinatizing a number-word sequence with them, and considering the two collections as one, one arrives at the same result every time.

The mathematical reliability is based on what von Glasersfeld calls (2006, p. 68) a “hypothetical trick,” a non-mathematical procedure that is “abstracted.” “The certainty of the results […] springs on the one hand from the fact that one operates in a hypothetical mode and therefore obliges oneself not to question what one has hypothesized; and on the other hand, on implicit faith in one’s memory of meanings attributed, of operations carried out, and of results they produced.”

This analysis shows the operational origin of arithmetic procedures and other algorithms, and consequent reliabilities that one tends to take for granted; it also epitomizes the RC-method. The “hypothetical trick” can be taken as a prototype of type (ii) MIR-postulates and beliefs, as well as of their type (i) “working” equivalents.

Geometric tools

Von Glasersfeld (2006, pp. 66–67) also offers an operational basis for geometric concepts such as point (“the center of attention”), line (“drawing”), or plane (“moving a line sideways”).

Like numbers, the geometric entities are not found; they are human mind-and-world working-tools structured and used for dealing with experience, and for stabilization. The mentioned reasoning for “point” in particular is of the mental-operation type and does not even involve motor action; in theory a point “has zero dimensions.” They are elements of the gestalt-operation in geometry. (However, if one physically draws a point, a line, or a plane, the result always has properties that in principle require treatment as three-dimensional objects, though the additional ones are usually “neglected”; Glasersfeld 1995, p. 185; drawings are imperfect, though still effective, means to communicate mental structures, which are implied to be the same for all.)

But then, how real are points, or lines? They are in the mind, like all mathematical structures (cf. Lakoff & Núñez 2000); objective aspects are their working derivatives that can for many purposes be handled as if they were MIR units. The visual system has objective mechanisms to detect objective points, lines, and edges.8 They are the physiological basis for the corresponding mind-and-world-tools of the structuring subject, elements of gestalt-formations. With points and lines, one can draw a tree, a house, or a human face; but these objects are not made of points or lines, nor of gestalt entities; even less of the underlying physiology. Extrapolating from here, one can draw triangles, circles, cubes, asymptotes, etc., tools for exploratory tasks in structuring and handling visual experience, together with other visual tools such as color, or tactile ones such as solidity,

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etc. The tools are elements of subject-inclusive working-reality, just as numbers or working-metaphysics (and indeed all mind-and-world structures) are.

Gestalt-tools and MIR-reference
Our notion of the world is predominantly visual. Visual gestalt formations have a quality of permanence and definition that is lacking in probabilistic reliability. With the gestalt-tools we can package experience into items suitable for handling and communication. When words are attached to them, they can become metaphysical entities, because words, as communication tools, have a built-in supra-individual aspect: the word-gestalt concepts lend themselves to a mis-interpretation of universality and absoluteness, if desired. In that way, type (i) statistical reliability can give way to a leap to type (ii) certainty of MIR-knowledge. The Pythagoreans not withstanding, numbers are less likely than gestalt-formations to be considered identical to or referring to a fictitious MIR-world.

But evidently the reliability of gestalt-tools is limited: on TV a forward moving car may show its wheels turning backward. However, we see what we know (“it isn’t so”), and that corrects the problem. Gestalt-tools are also used in trying to interpret the double-slit experiment of QM (cf. Baggott 2004; Lindley 1996). One may ask whether macroscopic gestalt-notions such as “corpuscle” and “wave” are valid (viable) here (and mutually exclusive). Physicists tell us that QM has reliable mathematical procedures, but is difficult or impossible “to understand” (presumably in visual gestalt terms). In using a visual image of reality, one needs to remain aware of the limitations of visual gestalt tools.

H. Probabilistic reliability versus leaps of faith to certainty, and the question of relativism
The procedures are more reliable for counting than elsewhere: the operations of arithmetic are simple (“digital,” even if you do not count on your fingers) and can be repeated by any-one, with identical results if procedural mistakes are avoided. But, as von Glasersfeld has shown (see above), in mathematics too there is a difference between reliability of procedure and certainty of faith. Certainties are derived from posited and certified (MIR-) structures that are no longer scrutinized and may even be out of awareness. That can facilitate life much, at variable risk.

One posits an ad-hoc working-hypothesis (or accepts an intuition, revelation or, most commonly, an authority’s opinion or command at face value), certifies it as reliable (true, real) by leap of faith, and/or by abandoning critical thinking, and in turn derives certainty from the certified – and often externalized – structure. The certainty procedure involves forgetting and/or excluding from awareness (1) the circularity of the operation, (2) the MI-step, and often also (3) the leap of faith. These steps mark the difference between reliability of procedures and certainty.

Knowledge is probabilistic except for such leaps of faith; numbers can sometimes make the probability more precise. In contrast, certified structures are the only available source of persistent certainty, including in mathematics. They are results of human postulates, leaps of faith, circular reasoning, and forgetting. In some instances, the name of the trick ought to be self-deception. The constructivist insight undoes the forgetting: thereafter certainty retains awareness of its risk (i.e., doubt).

For certainty, type (ii) knowledge (leap to MIR-belief) is effective, but it may interfere with critical thinking; for all other purposes type (i) knowledge (such as constructivism) is more helpful.

The rejection of MIR-belief may evoke a fear of relativism – that reality and truth depend on arbitrary opinions. But working-structures cannot remain arbitrary, since they can be maintained only if they are viable. Social structures can be more varied, but depend on consensus, such as concerning expected effectiveness. For instance, United Nations decisions may at times be inadequate, but they are probably not arbitrary; another example is the confidentiality of professionals toward their clients, an expectation and standard that is documented in rules of conduct, but does not have to imply MIR-belief.

I. Automata and inversion of agency
The use of automata is closely related to the leap of faith to an MIR-view.

Von Glasersfeld quotes Gottlob Frege (who triggered the development of analytic philosophy) on mathematical abstractions (2006, p. 65): “the things that we number must be distinguishable, whereas the [abstract] units of arithmetic are not.” Since the subject is omitted, this statement (“are not”) omits the operational aspect. Frege appears to have seen the result of “abstracting” (= “taking away” from the events that gave rise to it) as pre-structured, not operational. It would then not only be extrapolated from a specific procedure and generalized (a “placeholder” with some flexibility of concept-images, Glasersfeld 1995, pp. 91ff), but also be mind-independently automated, taken away from the subject’s activity.

If the acts of counting are considered one at a time, the arithmetic units are not identical. Each can be made distinguishable by paying attention to it, but they are usually treated as identical. The operational question is: how much can and should we distinguish? Treating numbers and numerical relations as identical, as mind-independent and trustworthy algorithms or automata, can be our (the subjects’) view, deliberately or by default. Computers are used on that basis: the subject’s act is delegated to trusted automata (Glasersfeld 2006, note 15). The automation can have ramifications that, even in mathematics, are at first unexpected, such as infinity, imaginary numbers, or negative probabilities. But the subject-agent remains, in principle, a constituent part of the process (Glasersfeld 1995, pp. 96ff).

Implied (mind-independent) automation of logical-mathematical symbols, with implied completeness-in-themselves, seems to be a feature of analytic philosophy in its pursuit of truth. This aspect disappears when it is acknowledged that the mind encompasses these tool-structures; then the completeness is in the mind, but its center cannot be structured (see part I, below).

Delegation of responsibility to automata of various kinds (including airplanes, the postal service, governments, but also to some we have not invented, like the functions of our own bodies) is inevitable: because we have no
choice, for instance, and/or because our attention has limits. But this trust and inversion of agency may become counter-productive if the automatons fail or develop unexpected functions and place us in the position of a sorcerer’s apprentice, who tries to re-gain control.

In view of the ever-increasing amount of objective (actually how-to) information, it is perhaps the most difficult aspect of the constructivist view to remain aware of the primacy of ongoing (subjective) experience. In practice we can delegate agency (and responsibility) on a temporary (or as-if) basis, but simultaneously acknowledge that in principle we remain responsible throughout. 9

J. Holistic structures

Belief systems are also used for certainty by trying to structure experience as a whole, with the help of postulated overall structures. Indeed, if the whole is not included in some way (at least in principle) the view is incomplete.

Mystery, rationalism, and the unstructured center

Holistic structures include the subjective center of ongoing experience, which cannot become structured; that would require an impossible objectivity and packaging of subjective experience. Positive holistic structures are consequently inevitably paradoxical or mystical, but may be adopted by means of absolute belief, in order to obtain overall meaning and stability via a leap of faith (“credo quia absurdum,” Tertullian). The paradoxes may, however, prevent some people from accepting theism and other positive holistic beliefs. But constructivism can accommodate holism, and may offer a way to dissolve the paradoxes.

For one, constructivism can back up positive holistic structures (which are put on hold). This consideration does not make mysticism rational (cf. Glasersfeld 1995 pp. 24ff), and does not justify irrational behavior, but it provides a rational understanding of the presence and irrational function of mysticism. Namely, that the irrationality is a consequence of the unstructured origin within which all rational thinking takes place.

And secondly, holism and the objective method can both be tools in experience with a negative center. Non-theistic (and non-positive) stability practices are used successfully in some cultures, with the help of meditation. They have an unstructured (negative) center-point such as nirvana (which is free of paradoxes). Seen from there, positive theistic structures appear as imperfect preliminary tools, a temporary convenience on the way to the goal of dealing more directly with the unstructured center (cf. Percheron 1958, pp. 38–40).

The reliable rational logical (language) and mathematical (counting) methods on the other hand cannot offer the overall coherence of a holistic view with inclusion of subjective experience, nor can the objective method (which usually implies the gestalt = reality view) do this. The ex-positivist Paul Feyerabend wrote (1999, pp. 32–33) “[i]f discourse is defined as a sequence of clear and distinct propositions […] then discourse has a very short breath indeed, […] If the history of thought depended on a discourse of this kind, then it would consist of an ocean of irrationality interrupted, briefly, by mutually incommensurable islands of sense.” But just that is the start-point of constructivism: we do not try to find sense ready-made, we have to make sense within the unstructured. 10

K. Conclusion: Constructivism in the history of epistemology

Constructivism restores to epistemology the unstructured origin of thinking, and the subject(s) as agent(s) of all structure-formation and -use. The pre-structured reality view is then no longer an end-point for epistemology (Whitehead had suggested that all occidental philosophy is a footnote to Plato), instead it has been a long-term but nevertheless temporary means for obtaining certainty from postulated (mostly mind-external) authorities: the viability concept of Ernst von Glasersfeld’s Radical Constructivism is a step beyond this stage. Rather than maintaining MIR-belief for certainty, it helps to de-construct ontology; one can then use viable experience-structures and achieve stability of stance and reliability of grasp by operational (and co-operative) means.

In this way, constructivism can offer a complete view (of “life,” of “reality”).

Many conceptual aspects of constructivism (some of which have been briefly discussed in this paper) will need further scrutiny. Examples are, among others, the relation of structuring to inventing; of constructivism and phenomenology to cybernetics; the relevance of constructivism for science and teaching; the operational basis of basic concepts; reliability of mental tools versus certainty by circular reasoning plus forgetting where it comes from; the differences between “Anglo-American” and “Continental” opinions on the need to include ongoing experience; agnosticism versus redundancy of ontology; the back-up function of constructivism. One would, of course, also want to consider the work of other constructivists, and of non-constructivists, in theory formation. These are important – though not easy – questions; but dealing with them could, besides increasing responsibility, also make life more interesting.

ABOUT THE AUTHOR

Herbert F. J. Müller, born 1924 in Cologne, studied medicine at the University of Cologne (Dr. med., 1951). Medical internship and postgraduate training (psychiatry, neurology, electroencephalography) in New Jersey, New York, Rio de Janeiro, Düsseldorf, and at McGill University in Montreal (Associate Prof. of Psychiatry). Now retired from clinical work at Douglas Hospital, Montreal. – Studying the mind-brain relation, it became clear to me in 1994 that to access this question the notion of pre-structured mind-independent reality must be abandoned. As this requires a more general review of concept use and epistemological questions, I started editing the Karl Jaspers Forum http://www.kjf.ca/ in 1997. In 1999 I became aware of radical constructivism (chiefly the work of Ernst von Glasersfeld), which has many features in common with my present work. A symposium on the mind-brain relation, in which von Glasersfeld participated, took place at the Douglas Hospital (McGill University) in September 2001. My present work concerns the conceptual basis of this point of view – which I label “structuring with zero-derivation” or “zero-reference” – and its relation to other areas.
Notes

1. A recent description of my position of zero-derivation (0-D) of mind-and-world structures and of the inversion of thinking (i.e., relegation of agency to outside the subject) can be found in Müller (2005). As mentioned in various contexts in the present paper, it differs in some respects from von Glasersfeld’s opinion and I hope this can be understood as a contribution to discussion rather than criticism.

2. I employ the term “entity” or “structure” here as a general expression for mental tools, for instance concepts, theories, but also more basic ones such as words, numbers, gestalt-formations, objects, and including qualia as well.

3. In case they are understood as working structures, the two possibilities interact and complement each other. – Similar is the Chinese distinction (3rd century BC) between (i) the dark weak force (Yin), and (ii) the bright strong force (Yang), and their interaction.

4. Empiricists, positivists, and realists have tended to continue using traditional type (ii) metaphysics-ontology (“every idea is the idea of a being,” wrote Hume – probably a mind-independent being); but most also insisted that they did not use metaphysics, because it had “no meaning.” Kant claimed that things-in-themselves are “necessary for reason,” not experienced (as noumena). Phenomenologists wanted to discover structures without making ontological assumptions, but fell back onto ontological positions of one or another type. Heidegger even declared that “phenomenology is ontology” (1953, p. 37); this actually implies that phenomenology = noumena, apparently without giving up the idea of absolute validity of noumena; and furthermore that these noumena can be known.

5. The mathematician Kurt Reidemeister (1954) saw existentialism as non-objective (“unsachlich”), avoiding obligations (“unverbindlich”), and (p.24) including mystical thinking. These features result from dealing with subjectivity, which cannot become objective. But he criticized the phenomenologists without mentioning the views of his fellow-mathematician and phenomenologist Edmund Husserl, who advocated a view of essences (“Wesens-Schau”).

6. A switch to working-ontology helps to address the mind-brain relation question: knowledge of brain activity develops within the mind, not vice versa (see my Target Article 45 in the Karl Jaspers Forum http://www.kjf.ca/).

7. Let us say that in some years from now it will be possible for you to undergo a brain scan which simultaneously measures blood flow, electrical and chemical neuronal activity, and informational aspects of brain activity. If that gives a reasonably complete assessment of what your brain does (the functions of many interacting brain systems in fact) while you are in various subjective activities (experiences) of perceiving, thinking, feeling, remembering, meditating, alertness, drowsiness, etc., is any of this, or some mathematical expression of a combination of the measures, the same as what you experience? To pose this question is to answer “no” – I would think. But there are some realists who claim that brain, or brain activity, equals mind.

8. The philosopher Alva Noë (2006) observes that the work of Hubel and Wiesel has been conducted on the erroneous assumption that vision is a passive event in the brain.

9. This can lead to a correction procedure for inverted thinking. As one example of many: when it is suggested that the mind (subjective experience) has to originate in a theory, it is readily shown that this is impossible because theories originate in the mind, and not vice versa.

10. Holistic structures (of instrumental “reason”) cannot without self-contradiction bridge irrationality, which is an essential aspect of theism (“credo quia absursum”). The Pope has recently (2006) pleaded for a connection between faith and reason, mainly by referring to the influence of the Hellenistic “logos” on the Gospel according to St. John (“In principio erat verbum, et verbum erat apud Deum, et Deus erat verbum”, Nestle & Aland 1963). He hoped for a widening of the concept of scientific reason, so as to include faith. But he did not explain how to do that; and the Vatican has in the past emphasized that, to believe in God, an “ontological leap of faith” is required. The two requirements (coherent reason and ontological leap of faith) are not mutually compatible. – This type of difficulty is not confined to theisms; it supervenes also in MIR-naturalistic views which are extended to holisms, such as when the block-universe is said to render free will impossible (cf. T A91 in the Karl Jaspers Forum http://www.kjf.ca/). The use of the block-universe notion usually implies a type (ii) belief that “physical reality has four dimensions,” rather than “can in some respects be handled using four dimensions,” as one would say in a type (i) constructivist view.

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Accepted: 2 March 2007