The Common Denominator
of Constructivist Approaches

Any one-dimensional answer to the question "What is constructivism?" does not only contradict constructivist principles, it is above all counterproductive for scientific and philosophical endeavors. It would be difficult if not impossible to lump together the many independent disciplinary roots and proponents of constructivism. However, it is possible and desirable to distill their common denominator. From what has been said so far in this editorial but without going into further details (and thereby violating the idea of a denominator being wide enough to cover various paradigms) I present the "constructivist program." It encompasses the following ten aspects.

1. Constructivist approaches question the Cartesian separation between objective world and subjective experience

As argued by Josef Mitterer (2001), such dualistic approaches, being the prevailing scientific orientation, are based on the distinction between description and object, and their argumentation is directed towards the object of thought. His thesis says: The dualistic method of searching for truth is but an argumentative technique that can turn any arbitrary opinion either true or false. Therefore the goal of dualistic philosophies, i.e., philosophies based on the subject–object dichotomy, is to convince a public audience (readers, listeners, discussion partners) of the truth. An example to surmount the separation is the concept of "co-enaction" (Varela, Thompson & Rosch 1991, p. 150) according to which "...knower and known, mind and world, stand in relation to each other through mutual specification or dependent coorigination."

2. Constructivist approaches demand the inclusion of the observer in (scientific) explanations

This is a consequence of the previous point. Foerster (quoted from Glasersfeld 1995) summarizes the crucial point in a single statement, "Objectivity is the delusion that observations could be made without an observer." Maturana (1978, p. 3) made it a dictum: "Everything said is said by an observer to another observer that could be him- or herself."

3. Representationalism is rejected

Questioning Wittgenstein's correspondence theory of representation ("in order to tell whether a picture is true or false we must compare it with reality") induced Glasersfeld to formulate the radical constructivist paradigm. In the constructivist perspective knowledge is the result of an active construction process rather than of a more or less passive representational mapping from the environment of an objective world onto subjective cognitive structures. Therefore, knowledge is a system-related cognitive process rather than a representation (Peschl & Riegler 1999).

4. It is futile to claim that knowledge approaches reality. Instead, reality is brought forth by the subject

As Glasersfeld (1991, p.16) put it, "those who merely speak of the construction of knowledge, but do not explicitly give up the notion that our conceptual constructions can or should in some way represent an independent, 'objective' reality, are still caught up in the traditional theory of knowledge."

5. Constructivist approaches entertain an agnostic relationship with reality

Reality is considered beyond our cognitive horizon. Any reference to it should be refrained from. This position is not necessarily limited to skeptical philosophies. Positivist Rudolf Carnap expressed the necessity of this aspect in his 1935 book saying that "we reject the thesis of the Reality of the physical world; but we do not reject it as false, but as having no sense, and its Idealistic anti-thesis is subject to exactly the same rejection. We neither assert nor deny these theses, we reject the whole question."

6. The focus of research moves from the world that consists of *matter* to the world that consists of *what matters*

Since the cognitive apparatus brings forth the world out of experiences, our understanding of what we are used to refer to as "reality" does not root in the discovery of absolute mind-independent structures but rather in the operations by which we assemble our experiential world" (Glasersfeld 1984). Or in the words of Foerster, instead of being concerned with "observed systems" the focus of attention shifts to "observing systems."

7. Constructivist approaches focus on self-referential and organizationally closed systems

Such systems strive for control over their inputs rather than their outputs. Cognitive system (mind) is operationally closed. It interacts necessarily only with its own states (Maturana & Varela 1979). The nervous system is "a closed network of interacting neurons such that any change in the state of relative activity of a collection of neurons leads to a change in the state of relative activity of other or the same collection of neurons" (Winograd & Flores 1986, p. 42). This is a consequence of the neurophysiological principle of undifferentiated encoding: "The response of a nerve cell does not encode the physical nature of the agents that caused its response." (Foerster 1973/2003, p. 293). Humberto Maturana (1978) suggests that we can compare the situation of the mind with a pilot using instruments to fly the plane. All he does is "manipulate the instruments of the plane according to a certain path of change in their readings" (p. 42). In other words, the pilot doesn't even need to look "outside." The enactive cognitive science paradigm expresses clearly: "...autonomous systems stand in sharp contrast to systems whose coupling with the environment is specified through input/output relations. ...the meaning of this or that interaction for a living system is not prescribed from outside but is the result of the organization and history of the system itself." (Varela, Thompson & Rosch 1991, p. 157).

8. Constructivist approaches favor a process-oriented approach rather than a substance-based perspective

For example, following Maturana living systems are defined by processes whereby they constitute and maintain their own organization. Their structure refers to the "actual relations which hold between the components which integrate a concrete machine in a given space" (Maturana & Varela 1979) while their organization defines the "dynamics of interactions and transformations" a system may undergo. Material aspects are therefore secondary.

9. Constructivist approaches emphasize the "individual as personal scientist" approach

as their starting point is the cognitive capacity of the experiencing subject. Sociality is defined as accommodating within the framework of social interaction. While social interaction is not considered a new quality in contrast to interacting with non-living entities, its complexity is acknowledged. However, society is not a priori given, not the "social precedes the personal" (Gergen 1997). Rather, "society" must be conceptually analyzed. Constructivism is also rather pragmatic about "common knowledge" such as texts. They "contain neither meaning nor knowledge – they are a scaffolding on which readers can build their interpretation" (Glasersfeld 1992, p. 175).

10. Constructivism asks for an open and more flexible approach to science

in order to generate the plasticity that is needed to cope with the scientific frontier. Also today's knowledge-based society must be assessed through its ability and willingness to continuously revise knowledge. Krohn (1997) refers to it as "the society of self-experimentation." Luhmann (1994) defines knowledge as schemata that are regarded as true but ready to be changed. Constructivism must be considered as a way to forgo the dogmatism that prevents science from becoming more fruitful and productive than today.

This list is deliberately painted with a big brush. Rather than limit future developments right from the onset, the list wants to give the necessary latitude to future authors in Constructivist Foundations to further extend the constructivist program. This is the constructivist challenge, and the journal will be one of its main champions.

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