

Response to Proulx

*“Maturana Is Not a Constructivist”
... Nor Is Piaget*

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Readers of *Complicity* are most fortunate to have Jerome Proulx’s paper distinguishing “Maturana and Varela’s Theory of Cognition ... from Constructivist Theories.” This paper sits as a fine companion piece to the *Educational Theory* paper by Brent Davis and Dennis Sumara (Fall, 2002), distinguishing various types of constructivism and situating complexity as an alternative to constructivism, one focusing neither exclusively nor heavily on the actions of the learner but rather on the interplay of factors or forces within a dynamic, learning situation. Proulx points out that “constructivist” (constructivism) – a word Davis and Sumara note is not part of Jean Piaget’s vocabulary¹ (p. 411) – has become, in the hands of Ernst von Glasersfeld, a mantra for teachers dealing with children.

¹ While not a common part of his vocabulary, Piaget did, in the last year of his life (1980), use the words “constructivist” and “constructivism” (Piaget and Garcia, 1991, p. xii and p. 43 respectively). Davis and Sumara point out that Piaget’s relation to the notion of “construction” is not immediately obvious. As a proclaimed structuralist, what Piaget asserted was, I believe, that the child constructs the structures or schemas necessary for his/her learning. How the child constructs these structures is an issue Piaget wrestled with all his life.

Today, if you teach children, you must be a constructivist, else you really are not a teacher. Without denying the fine contributions von Glasersfeld has made in helping us see the difficulties inherent in a *passive* epistemology – one based on “taking things in,” one our schools tacitly use – Proulx points out that von Glasersfeld’s “radical” epistemology is heavily subjective. He quotes von Glasersfeld:

Radical constructivism is an attempt to develop a theory of knowing. ... [one concerning itself with] the experiential world of the knower. This experiential world is constituted and structured by the knower’s own ways and means of perceiving and conceiving, and in this elementary sense it is always and irrevocably subjective. (von Glasersfeld, 1992, pp. 1-2; addenda mine).

Proulx points out that while Maturana and Varela agree with von Glasersfeld that there is no objective “‘truth’ out there waiting to be grasped or discovered,” they disagree with the implications inherent in his statement that “the *only* thing we have access to is our world of experience.” Rather, Maturana and Varela’s frame is an inter-active one, one wherein “we and the physical external environment are reciprocal.” They co-define each other. Proulx quotes Varela: “*C’est le processus continu de la vie qui a modelé notre monde par ces aller et retour ...*”

In introducing life (*la vie*) into this “going and returning,” Proulx is, of course, bringing forth Maturana and Varela’s biological frame, one different from von Glasersfeld’s cognitive frame. Proulx goes on to say, “the world of *meaning* is not in us, nor in the physical world, it is *in the interaction* of both in a mutually affective relationship” (emphasis mine). As Davis and Sumara (2002) point out, this emphasis on *interaction* is a major thrust of John Dewey; and also lies at the heart of complexity science – particularly as that science has been developed by Ilya Prigogine (1997).

What fascinates me at this point is the relationship between Prigogine and Piaget, especially during the latter years of Piaget’s life. In 1980, Piaget made two statements I have found heuristic in my own thinking. The first statement is:

With respect to practical actions, we must distinguish their causal aspect (the outcome that is verifiable after the fact) from their anticipation which is inferential (Piaget and Garcia, 1991, p. 4).²

Piaget is here making a distinction, important at the level of *practical operations*, between a logic of verification (the “truth” of a statement – the basis for the theory of assessment that educational research uses) – and what he calls operator logic.

² In his book *Pure Immanence*, Gilles Deleuze (2005) brings forth and expresses well the *new* sense of causality that Piaget and Garcia are implying here, one that does not come from a mechanistic frame: “Causality requires that I go from something that is given to me to the idea of something that has never been given to me, that isn’t even give-able in experience Causality is a relation according to which I go beyond the given; I say more than what is given or give-able – in short, *I infer and I believe*, I expect that” (p. 40; emphasis mine).

Operatory logic³ can rightly be considered as the practical logic a child uses in developing his/her understanding within one of Piaget's stages of operations, as well as the logic the child uses in moving from one stage to the next, more advanced stage. In either case, *this practical logic is one of development, not of verification*. As a logic of development – operatory – this logic involves inference. To infer is to draw conclusions, to deduce, to make connections, to see relations. Piaget calls this logic, *natural deduction*; it is “the reasoning actually used” by the child or learner. To focus on the actual reasoning the learner uses – his/her intentions – is a departure from the validity *only* frame so dominant in current schooling. The validity of an action, statement, procedure is, of course, important; but to exclude a person's intentions/anticipations/ inferences from the process of learning is to turn learning into a simplistic and mimetic act.

In traditional acts of teaching what the child or learner *intends* to do is not considered, only what s/he did. For Piaget, such a non-developmental view misses the child's “constructions,” his/her practical actions with all their “illogicalnesses.” In a word, traditional teaching (“teaching-as-telling”) actually obliterates the very actions of the learner as s/he is engaged in the *activity* of learning. Piaget's operatory logic with its focus on process/ anticipation/ inference is indeed based on interactions. Such a dynamic relationship, carrying in its process the power of transformation, lies at the heart of the open systems frame that both Piaget and Prigogine share.⁴

Curriculum designs and instructional strategies focusing on a learner's anticipations (what s/he intends) and bringing those intentions into *dynamic interplay* both with themselves and with the results produced by the actions would make learning far more efficient, of better quality, and would open space for the creative emergence of new ideas and procedures. Incorporating non-linearity into curriculum design and using conversation as a prime mode of instruction presents interesting challenges to educators. A focus on such challenges calls into question the efficacy of a sequentially ordered curriculum,⁵ as well as the common teaching strategy of “teaching-as-telling.” While the constructivist movement does help us see the efficacy of paying attention to the learner's

³ Piaget's operatory logic – not a mechanistic if/then or cause/effect logic – is, obviously, a logic of actions. It includes along with the behavioral actions themselves, anticipations, inferences, intentions. The 1991 book, that with, and finished by, Garcia, is very much concerned with reframing the (too often dichotomous) relationship between extensional (formal) logic and intensional (operatory) logic. As Garcia says, “Logic starts at the moment a child is able to anticipate a relation between actions ... [and] anticipation of actions means *inference*” (Piaget and Garcia, 1991, p. 155). Bringing inference into the logic of a child's actions emphasizes *what the child intended* or thought would happen when s/he performed his/her action. As one of the book's editors (a teacher-educator) says, “Schooling often involves an effort to eradicate... this ... aspect of a child's learning process.”

⁴ In 1975, Prigogine looking over Piaget's epistemological framework (an active, dynamic one) said that he was “in complete agreement with the basic ideas of genetic epistemology” (in Piaget & Garcia, 1991, p. 312). Rolando Garcia, in his part of the book says: “The evolution of biological and cognitive systems are both *examples* of the evolution of *open systems* in interaction with their environment (Piaget and Garcia, 1991, p. 126; italics in the original).

⁵ Piaget's stages/schemas are indeed sequentially ordered, and hence one might infer a sequenced curriculum from such, but the movement from stage to stage with its process of dynamic equilibration is both non-linear and recursive.

frame – his/her schemas; the complexivist movement goes beyond this subjectivization to bring forth the concept and practice of transformation via *situational* self-organization. The comment about situational self-transformation leads me to the second statement of Piaget's I find fascinating:

At all levels of development there are implications between actions or meanings; then there are dialectical relations that lead the subject to go beyond what he has already acquired (Piaget and Garcia, 1991, p. xii).

Looking at the latter part of this statement, I see Piaget saying that there are interactive relations – I would prefer the word dynamic to dialectical – *that lead* the subject, the one acting, to go beyond; to go beyond where s/he now resides and to venture into the land of the new. This process of going beyond is transformative. In Piaget's terms, it is the *elusive* process of jumping from one stage or level to the next. He never could explain this process, only show that it happens (and has its own logic, that of relations). There is a spirit of the mystical existing within this interactive process.⁶ To me, this spirit is reminiscent of A.N. Whitehead's dictum: "It lies in the nature of things that the many enter into complex unity" (*Process and Reality*, 1929/1978, p. 21), and with John Dewey's statements (*Democracy and Education*, Ch. 3) concerning a sense of control, social control, which is not imposed externally but rather emerges internally from the interactions in the situation itself. This "other mode of control ... a more natural mode ... residing in the nature of the situations" is one where the activity, the *process of doing*, in conjunction with and shared with others doings, provides its own direction, "guiding an activity to its own end." This conjointness is also akin to the co-evolution and co-adaptation Proulx brings out so well in his discussion of Maturana and Varela.

Once one focuses on *process as conjoint with product*, process now being not merely a subservient means to a set end, then the activity of the child's or learner's actions takes on a new importance. What the child/learner *intends or anticipates* is as important as what results from his/her actions. Meaning arises from the interplay of process and product, of that intended/anticipated and that resultant. Such a focus is pointed out by Proulx – "meaning is not in us, nor in the physical world, it is in the interaction of both in a mutually affective relationship" – and if brought to the forefront in any teaching/learning situation would, I believe, make such situations not only more enjoyable but far more effective and efficient.

⁶ A sense of the mystical does exist in this process; and it is important I believe to keep this sense elusive and ill-defined. To anthropomorphize the spirit of process – as did those proposing an *élan vitale* – is to fall into the trap of turning the process into a thing or saying that within the process there is a "thing," and then of course being unable to find this material "thing."

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