

## *Learning as Dynamic Spacing: Changing Language Games through Complexity*

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*To imagine a language means to imagine a form of life.*  
(Wittgenstein, 1953, section 19)

The notion of “learning,” from a complexivist perspective, implicates a fundamental change in our language games. From post-epistemological, post-modern, post-structural perspectives, to think about “learning” requires ways of “seeing,” interacting, or resonating with our social, physical, psychic, and meaning environments. Engaging complexity language challenges traditional notions of learning. As a modernist construction, notions of learning are dominated by either a focus on manifest behavior (i.e., learning = changes in behavior) or an emphasis on the “black box” of mind (i.e., learning = changes in cognitive structures of the mind).

Wittgenstein describes that, in order to have what he terms a “change in aspect,” we need to change, not our ways of seeing, but our ways of seeing-as. Through language and metaphor, we may change our ways of seeing-as and, ultimately, our language games. Meaning, from this post-epistemological perspective, is understood not as something outside of language, but emergent as language-in-use. Such post-epistemological perspectives likewise challenge the notion of the essentialized, individuated, separate

self. As our language games change through complexity metaphors, our ways of thinking about thinking, thinking about things, and thinking about learning are challenged. The very notion of self, from post-epistemological perspectives, assumes a post-ontological stance—self as emergent, creative, interconnected, dynamic and complex.

Heidegger's notion of self (1996) as "dynamic absence" is illustrative of this post-epistemological, post-ontological perspective.

Da-sein is like a space in which things let themselves be seen. If the phenomenal world is like a wood crowded with trees then Da-sein is the clearing in the forest, the space in which phenomena are made manifest. (Mitchell, 2001, p. 140)

This notion of spacing, of dynamic absence, is very different from the idea of self as place holder; self as existing in space and time. It is not a matter of occupying space, but of creating spaces, clearings in the woods, being-in-the-world. Complexity language allows us to see-as differently, to see relationship as dynamic, self as complex interaction, and learning as emergent. Rather than a product of experience or a product of language/meaning, learning can be "seen-as" a complex space of dynamic interaction, a nexus, a clearing, a folding and unfolding. As Wittgenstein describes, it is impossible to define this space—it can only be made sense of through a change in aspect; through changing our language games.

Part of the language-game of complexity is the language-game of dissipative structures. Interestingly, Piaget, one of the most significant learning theorists of the 20<sup>th</sup> century, was aware of Prigogine's work in dissipative structures. Long before Prigogine's ways of seeing dynamic relationships as reorganizational emergence, Piaget articulated his laws of equilibration in his unpublished 1918 autobiographical novel, *Recherche* (Chapman, 1992). Equilibration, according to Piaget, is a process of becoming wherein conflict and cooperation play important roles. The tension and dialectic between these two states are necessary in order for the system to evolve to higher levels of organization.

Piaget recognized, however, that dissipation alone was not sufficient for explaining the dynamic interaction between systems and their environments and thus for describing learning. As described by Chapman (1992):

In Piagetian theory exchanges with the environment are a product of the assimilation of the environment *by* the system, but in Prigogine's theory the major form of exchange is a dissipation of entropy generated within the system *into* the environment. (p. 47)

The language game of "autopoiesis" unfolds the dissipative process. Many parallels can be found between Piaget's theory of equilibration and

biological theories of autopoiesis. According to Maturana (1980), all living systems are self-producing systems requiring interaction with their environment. The process of self-organization and self-creation is autopoiesis.

Parallels with Maturana's theory of autopoiesis are incomplete, however. According to Piaget, the dialectical relationship between a cognitive structure as an open system and its environment, both in terms of its previous self and in terms of physical and social others, is not adequately accounted for by either theories of autopoiesis or dissipative structures. As described by Chapman, this dialectical relationship was addressed by Piaget in his response to von Foerster at his 80th birthday celebration:

An adequate model of the construction of knowledge must fulfill two difficult to reconcile conditions: the indefinite opening on new possibilities and the conservation of the cycle of mutual implications already constructed and destined to become subsystems in subsequent expanded systems. It is thus a question of reconciling openness and closure. (Chapman, 1992, p. 48)

Such reconciliation is one not of compromise but of challenging reified notions of learning through changing our language games. The language games of complexity, the images of the Mandelbrot set, the sounds of fractal music, all create spaces for seeing learning "as" self-generating, self-similar, self-perpetuating, self-sustaining, fundamental aspects of living and life. As we traverse the "borders" of the Mandelbrot set, for example, we experience the infinite within the finite, the space between chaos and order, the dynamic of openness and closure—complexity (Waldrop, 1992). Missing in Piagetian learning theory was the post-epistemological, post-ontological language of complexity. Couched in modernist language-games of reified self, Piagetian structure attempted to define the clearing, cutting down the trees and losing site of the spaces created.

Learning, as a transformative, dynamic, complex process, defines the spaces of our being as "negative absence," created and sustained through the meaning structures of our language games. As our language games change, we may come to see schooling as something very different. The clearing of learning spaces may ultimately bridge the post-modern divide, emerging, on "the other side" as a new way of seeing. As complexity metaphors pervade the language games of schooling, schooling itself will change and like the child who comes to conserve number in a Piagetian developmental psychology experiment, we will never believe we could have been so naïve as to define learning as the products of educative experiences. Rather, we may come to see learning as a complex, dynamic relationship essential to our very social and interconnected life.

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