Connectivism: new paradigm or fascinating pot-pourri?

Antonio Calvani

University of Florence

antonio@calvani.it

We are talking about a concept which is entering more and more the technological debate, above all with regard to the solutions of the 2.0 web, and which someone starts adding, as fourth name, to the canonical triad of "isms", behaviourism, cognitivism, constructivism: connectivism. We wonder whether we are handling a new paradigm.

A text that should be considered is Knowing Knowledge by Siemens[1] which, in the form of wiki in progress[2], enlightens on the thought of the author who does not see the book anymore as final object but thinks about network notes, conversations, interactive systems. It is an anticonventional, aesthetically pleasant and stimulating paper, with a lively style and an amusing graphics, characterized by frequent aphorisms and metaphors. But the reader who would look for an organic view or for instructions easily transferable in a real working context, will be disappointed: the work, declaredly chaotic, has the character of a creative bricolage, in which overlapping, incongruities, open suggestions are part of the game.

Presuppositions follow some concepts (or would it be better say slogans?) which have been accompanying the reflection on the knowledge society for at least twenty years: network technologies condition the ways of building

---

1 http://www.elearnspace.org/KnowingKnowledge_LowRes.pdf

2 You can participate in the collective construction at the url http://ltc.umanitoba.ca/KnowingKnowledge/index.php/Main_Page

knowledge. Knowledge is dynamic, it grows exponentially, it is characterized by decentralization, combinatorial capacity, provisional character, circularity; human experience in the digital society for its part is becoming more and more integrated; traditional boundaries between traditionally separated spaces are becoming slighter: real/virtual, formal/informal, emotionality/cognition/social relationship, learning/work, individual/organization represent less and less distinguishable entities.

Learning is considered a continuous process mainly residing in non human applications, that is in technologies and connections between knots: among the main agents are difference of opinion, ability of seeing connections between fields, ideas and concepts (transvergence), suspension of certainty.

In this picture the term connectivism means network forming process and relies on the theoretical plane on "the integration of principles explored by chaos, network, complexity, and self organization theories" (p. 30). The principal criticism is addressed to hierarchies, in favour of networks and ecologies capable of quick adaptations. According to Siemens ecologies are structures fitter for facilitating the flow of knowledge, since they are informal, disconnected, free, dynamic, adaptable, muddled, chaotic, based on weak links and on trust, tolerant about mistake, rich and continuously evolving, all the contrary of structures usually demanded by organizations. The author suggests therefore an overturn of the point of view: Fordist-Taylorist hierarchic structures, stable and reassuring, which in spite of everything go on dominating the life of organizations, should turn into dynamic ecologies.

Somehow none of the concepts represents in itself an original idea. The main references are Wittgenstein (knowledge as play or dance), Durheim, Adorno, Drucker, Senge, Polany, Nonaka, Maturana, Goleman. Other authors could have been reminded: Piaget, for the concept of decentralization, Wieser, Norman, Bruner, Wenger and Levy for the remarks on distributed intelligence, on ecology of communities, on the relationship between knowledge, intelligence and networking are renowned absentees.

The tone is at first modest (we cannot define knowledge, we can only describe it; a single model of knowledge does not exist), but becomes more pretentious when it states that the theories of behaviourism, cognitivism and constructivism are not valid and that a new reference is necessary, more consistent with the nature of a learning that suffers the impact of the new technologies: our mind is not a black box (behaviourism), is not a computer (cognitivism), and even constructivism represents an unfit reference (mind does not build reality). "Construction, while a useful metaphor, fails to align with our growing understanding that our mind is a connection- creating structure. We do not always construct, (which is a high cognitive load) but we do

constantly connect" (p. 27) "We do not live in active cognition. We spend much of our time in containers that we have created. Instead of thinking , we are merely sorting and filtering" (p.23).

It seems that here, thrown away false modesty, connectivism is putting forward its candidacy to represent a new paradigm, even if this application is not supplied with a consistent reference theoretical frame.

The image of the network remains enveloped in a sort of ingenuous mythology: it is able to reflect on itself. Individuals are "network aware and competent" (p. 46); like dynamic participants in the ecology they change from passive consumers to active contributors. The construction of meaning is belittled in its complexity, "meaning is derived in real time" (p. 74). "As everything becomes connected, everything becomes transparent. Technology illuminates what was not discernable in the human eye. (p. 73).

The theoretical contribution of Stephen Downes appears more consistent and critically shrewd (*An Introduction to Connective Knowledge)*[3]. Here the connective knowledge is indicated as a form of distributed knowledge whose distinguishing mark consists in the fact that in it the property of an entity becomes also the property of another; not only a relationship but also the interaction between entities comes into play. There are interesting references to previous forms of associationism and interesting remarks on the different forms of network which differ in the density more or less fairly distributed within connections: for instance the internet, like most economic systems, represents to a larger degree a scale-free network, characterized by a small number of entities with a much lower number of connections; it is different for example from the nervous system which, although presenting neuronal groups more important than others, does not have unbalances as marked.

In Downes it strongly emerges the awareness of the critical state of knowledge, of the collapse of certainties, a strong sense of cognitive relationism; knowledge is never direct; what we know about the world is always interpretation, with phenomena of salience, inference and emergence (an emergence is, for example, the wave we perceive, which in reality is the outcome of other phenomena at the lower level). Also the networks we describe, and sometimes build, are themselves interpretations of the several connections that exist in an environment or in a society; they essentially depend on the point of view we adopt. There is strong awareness of the fact that connective knowledge does not offer greater guarantees of reliability and does not safeguard dogmatisms. Misdeeds through the propagation of mass mistakes have always been committed, and they can occur in massive doses given the propagation mechanisms of the network. Connective thought can give rise to reflexivity on the presence of these risks, surely it cannot suppress them.

3 http://www.downes.ca/cgi-bin/page.cgi?post=33034

Connections, a founding principle?

Apart from the shareability or not of these assumptions in their specific aspects, there is a concept that the digital world has brought to light and that cannot be trivialized: the strong significance that setting connections can take on, in so far as datum of our existence, on the cognitive, emotional and social plane.

It is an element that has an epistemological and applicative value. On the epistemological plane it is legitimate to wonder whether setting connections represents a founding datum; whether somehow human existence, considered in its innermost foundations, may identify with a continuous form of creation and deactivation of reticular connections. Compared to the models of cognitivism and constructivism, the interesting element is given by the attempt to place itself at a lower level, identifying a primitive underlying level tissue (on both the neurological and the social plane) where life and learning, individual and social context find contact points: this level is located in the connective activity, steady activity of life in its physical and technological-social aspects, which is more organic than the structuring in cognitive-conceptual sense typical of the superior mental activities

Perhaps a track of theoretical investigation could be sought through a comparison, also suggested by the close resemblance with the title of Siemens, with the transnational theory expressed by the last Dewey in Knowing and the Known (written in collaboration with Bentley in 1949) – try to play with the substitution of the word "connection" with "transaction"- in which the author rejected the traditional dualisms typical of classical philosophies (subject/object, realism/idealism) and he singled out a deeper level in the never definitive character of knowledge as continuous transaction.

Clash between ideas

Evident practical implications answer to the theoretical importance the concept of connection is gaining. Whoever moves in the net knows well to what extent it can constitute a significant resource, able to change sensibly the way of learning and working. Who starts an inquiry in a given field almost always finds out very quickly, sometimes also to his great disappointment, that others have already tackled the same or analogous problems, with similar or different approaches or solutions. He is therefore exposed to a "clash of ideas", whose effect can be considerable.

In a few time one can have a sufficiently wide view of a field previously unknown or can be led to review one's own opinion. Scientific communities have always developed their knowledge, thus producing intense dialectic interactions; what is changing now is the fact that these knowledge modalities, based on the aggregative or dialectic comparison of individual contributions,

do not concern only the high levels of science; instead they are acquiring a devastating strength, which was not even allowed in the more lively traditional scientific communities.

The strong informative exposure is significantly changing the way of knowing according to modalities that could not be imagined by the previous theoreticians of learning. Piaget, for instance, exemplified his concept of de-centralization through the well-known experiment of the plastic model of mountains: observing the landscape from different perspectives can lead to the restructuring of the original point of view. The decentralization that can be obtained through the possibilities of net informative interactions is different: it is more impetuous, immediate, less intentional, less predictable. This leads to think that the process of knowledge review not always and not necessarily runs through canonical steps of structuring/restructuring of the possessed schemes or through an assimilation/adaptation dialectic. It can develop instead because of a clash, violent impact, sudden breakdown in front of the unexpected coming of a contrary position which shatters all of a sudden the previous scheme, or because of the fine and continuous whirl of a wide complex of multiple spurs that crumble, almost inadvertently, at their bases the foundations pre-existing in a sounder period.

Implications for the school

In the texts above mentioned there are frequent direct or indirect references to school and to the need for its adaptation to the new references. With this respect, according to us, the critical aspects and the risks that can derive from a naïf transfer of this model must be taken into consideration. In short the greater risk comes from the fact that connectivism tends to overrate learning conditions and cultural stances that in reality are peculiar to specific fields: virtuous dynamics of acquisitive self-generation in the net are occasional emergences, that occur more frequently with categories of adult people, endowed with good technological and meta-cognitive abilities and with good knowledge in the domain, while they occur much less with all other categories, and *anyhow* facing a myriad of futile and disorientating interactions which in any case come into play.

A wild transfer of connectivism to school would lead to think that putting students on the net is enough to produce knowledge, thus consolidating that widespread harmful cliché according to which the more technologies we use, anyway we do it, the better it is for learning.

The undervaluation of the complexity of technical and cognitive operations is however a form of egocentricity peculiar to expert methodologists. They forget that they have become familiar with these operations after a long, tiring training pathway in which there is usually also a deep contribution of traditional

culture: they project their own expert world thinking that students can become part of it in a natural or intuitive way.

Trying to get down to facts with more precise references:

• when it is assumed that children learn spontaneously to act in the net, we should remember that this concerns only the lowest levels of technical functionalities. Continuous observations coming from teachers and also from recent researches, such as those on cognitive load, highlight how the capacity to move consciously on the net, to filter and manage information, to make an inquiry calls for metacognitive abilities, a conceptual horizon that young people usually do not possess, even more so if they have grown up exclusively in the digital culture; their activities in the net remain in the end mainly unorganized, extemporary and superficial. The construction of a mind capable of using consciously the net is not a datum that emerges from a simple frequentation with technology; it is a task that school must intentionally and gradually attain through modalities and forms to be sought partly also outside the technological dimension;

• when emphasis is laid on multi-perspectivity as a fundamental element of a new idea of knowledge, we should remember that most people possess a rather limited level of epistemological development and remain attached to a substantially transmissive view of knowledge: they prefer to have certainties. Knowledge as conversation is disturbing and destabilizing for the majority, it is a route fit for intellectual minorities;

• when, using the taxonomy about/to do/to be/where/to transform, it is asserted that our current structures of knowledge memorization (books, libraries, museums, etc.) are limited to the first two levels and that competences of higher level are built through reflection and informal learning, we should not forget that the (static) basis of the pyramid enables individuals to develop the highest competences and that the role of school – just because we are living today in the complexity of a reticular society in continuous motion - is, in the first place, redefining clearly and giving prominence to the foundations, basic competences and knowledge in their graduality and propaedeuticy.