

On Two Metaphors for Learning and the Dangers of Choosing Just One

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Acquisition Metaphor Versus Participation Metaphor

The upshots of the former section can be put as follows: All our concepts and beliefs have their roots in a limited number of fundamental ideas that cross disciplinary boundaries and are carried from one domain to another by the language we use. One glance at the current discourse on learning should be enough to realize that nowadays educational research is caught between two metaphors that, in this article, will be called the *acquisition metaphor* and the *participation metaphor*. Both of these metaphors are simultaneously present in most recent texts, but while the *acquisition metaphor* is likely to be more prominent in older writings, more recent studies are often dominated by the *participation metaphor*.

Acquisition Metaphor

Since the dawn of civilization, human learning is conceived of as an acquisition of something. Indeed, the *Collins English Dictionary* defines learning as "the act of gaining knowledge." Since the time of Piaget and Vygotski, the growth of knowledge in the process of learning has been analyzed in terms of concept development. Concepts are to be understood as basic units of knowledge that can be accumulated, gradually refined, and combined to form ever richer cognitive structures. The picture is not much different when we talk about the learner as a person who constructs meaning. This approach, which today seems natural and self-evident, brings to mind the activity of accumulating material goods. The language of "knowledge acquisition" and "concept development" makes us think about the human mind as a container to be filled with certain materials and about the learner as becoming an owner of these materials.

Once we realize the fact that it is the metaphor of acquisition that underlies our thinking about learning mathematics, we become immediately aware of its presence in almost every common utterance on learning. Let us look at a number of titles of publications that appeared over the last two decades: "The Development of Scientific Knowledge in Elementary School Children," "Acquisition of Mathematical Concepts and Processes," "[C]oncept-Mapping in Science," "Children's Construction of Number," "Stage Theory of the Development of Alternative Conceptions," "Promoting Conceptual Change in Science," "On Having and Using Geometric Knowledge," "Conceptual Difficulties ... in the Acquisition of the Concept of Function." The idea that learning means acquisition and accumulation of some goods is evident in all of these titles. They may point to a gradual reception or to an acquisition by development or by construction, but all of them seem to imply gaining ownership over some kind of self-sustained entity.

There are many types of entities that may be acquired in the process of learning. One finds a great variety of relevant terms among the key words of the frameworks generated by the *acquisition metaphor*: knowledge, concept, conception, idea, notion, misconception, meaning, sense, schema, fact, representation, material, contents. There are as many terms that denote the action of making such entities one's own: reception, acquisition, construction, internalization, appropriation, transmission, attainment, development, accumulation, grasp. The teacher may help the student to attain his or her goal by delivering, conveying, facilitating, mediating, et cetera. Once acquired, the knowledge, like any other commodity, may now be applied, transferred (to a different context), and shared with others.

This impressively rich terminological assortment was necessary to mark dissimilarities—sometimes easy to see and sometimes quite subtle—between different schools of thought. Over the last decades, numerous suggestions have been made as to the nature of the

mechanism through which mathematical concepts may be turned into the learner's private property; however, in spite of the many differences on the issue of "how," there has been no controversy about the essence: The idea of learning as gaining possession over some commodity has persisted in a wide spectrum of frameworks, from moderate to radical constructivism and then to interactionism and sociocultural theories. Researchers have offered a range of greatly differing mechanisms of concept development. First, they simply talked about passive reception of knowledge, then about its being actively constructed by the learner; later, they analyzed the ways in which concepts are transferred from a social to an individual plane and internalized by the student; eventually, they envisioned learning as a never-ending, self-regulating process of emergence in a continuing interaction with peers, teachers, and texts. As long as they investigated learning by focusing on the "development of concepts" and on "acquisition of knowledge," however, they implicitly agreed that this process can be conceptualized in terms of the *acquisition metaphor*.

Participation Metaphor

The *acquisition metaphor* is so strongly entrenched in our minds that we would probably never become aware of its existence if another, alternative metaphor did not start to develop. When we search through recent publications, the emergence of a new metaphor becomes immediately apparent. Among the harbingers of the change are such titles as "Reflection, Communication, and Learning Mathematics," "Democratic Competence and Reflective Knowing," "Development Through Participation in Sociocultural Activities," "Learning in the Community," "Reflective Discourse and Collective Reflection," "Mathematics As Being in the World," "Dialogue and Adult Learning," "Cooperative Learning of Mathematics," and "Fostering Communities of Inquiry." The new researcher talks about learning as a legitimate peripheral participation (Lave & Wenger, 1991) or as an apprenticeship in thinking (Rogoff, 1990).

A far-reaching change is signaled by the fact that although all of these titles and expressions refer to learning, none of them mentions either "concept" or "knowledge." The terms that imply the existence of some permanent entities have been replaced with the noun "knowing," which indicates action. This seemingly minor linguistic modification marks a remarkable foundational shift (cf. Cobb, 1995; Smith, 1995). The talk about states has been replaced with attention to activities. In the image of learning that emerges from this linguistic turn, the permanence of *having* gives way to the constant flux of *doing*. While the concept of acquisition implies that there is a clear end point to the process of learning, the new terminology leaves no room for halting signals. Moreover, the ongoing learning activities are never considered separately from the context within which they take place. The context, in its turn, is rich and multifarious, and its importance is pronounced by talk about situatedness, contextuality, cultural embeddedness, and social mediation. The set of new key words that, along with the noun "practice," prominently features the terms "discourse" and "communication" suggests that the learner should be viewed as a person interested in participation in certain kinds of activities rather than in accumulating private possessions.

To put it differently, learning a subject is now conceived of as a process of becoming a member of a certain community. This entails, above all, the ability to communicate in the language of this community and act according to its particular norms. The norms themselves are to be negotiated in the process of consolidating the community. While the learners are newcomers and potential reformers of the practice, the teachers are the preservers of its continuity. From a lone entrepreneur, the learner turns into an integral part of a team. For obvious reasons, this new view of learning can be called the *participation metaphor*.¹ From now on, to avoid tiresome repetition, I will sometimes use the abbreviations "AM" and "PM" for *acquisition* and *participation metaphor*, respectively.

¹ It should be noted that the decision to view learning as an integration with a community in action gave rise to quite a number of conceptual frameworks. The theory of situated learning (Brown, Collins & Duguid, 1989; Lave, 1988; Lave & Wenger, 1991), the discursive paradigm (Edwards & Potter, 1992; Foucault, 1972; Harre & Gillet, 1995), and the theory of distributed cognition (Salomon, 1993) are probably the best developed among them. All of these are theories of a new kind, differing from the old doctrines not only in their vision of learning but also, and perhaps most importantly, in their epistemological foundations and in the underlying assumption about the mission of research on learning.

To clarify the idea of learning-as-participation, a number of explanatory remarks would be in place. First, the question may be asked, "What is metaphorical about the issue of participation?" After all, learning implies participation in instructional activities, and thus its participational nature should perhaps be treated as literal, not as figurative. To answer this, let us take a closer look at the concept of participation as such. A quest after its roots will lead us, once again, to the world of physical objects. "Participation" is almost synonymous with "taking part" and "being a part," and both of these expressions signalize that learning should be viewed as a process of becoming a part of a greater whole. It is now relatively easy to spot those beliefs about learning that may be brought by PM as its immediate entailments. Just as different organs combine to form a living body, so do learners contribute to the existence and functioning of a community of practitioners. While the AM stresses the individual mind and what goes "into it," the PM shifts the focus to the evolving bonds between the individual and others. While AM emphasizes the inward movement of the object known as knowledge, PM gives prominence to the aspect of mutuality characteristic of the part-whole relation. Indeed, PM makes salient the dialectic nature of the learning interaction: The whole and the parts affect and inform each other. On one hand, the very existence of the whole is fully dependent on the parts. On the other hand, whereas the AM stresses the way in which possession determines the identity of the possessor, the PM implies that the identity of an individual, like an identity of a living organ, is a function of his or her being (or becoming) a part of a greater entity. Thus, talk about the "stand-alone learner" and "decontextualized learning" becomes as pointless as the attempts to define lungs or muscles without a reference to the living body within which they both exist and function.

Second, one may oppose the above classification of theories of learning by saying that most conceptual frameworks cannot be regarded as either purely "acquisitional" or purely "participational." The act of acquisition is often tantamount to the act of becoming a participant, and if so, one can find it difficult to consider AM and PM separately, let alone as mutually exclusive.² No claim on exclusivity of the metaphors has been made in this article, however. Later, I will argue for the inherent impossibility of freeing the discourse on learning from either of the two metaphors. Theories can be classified as acquisition-oriented or participation-oriented only if they disclose a clear preference for one metaphorical ingredient over the other.

Finally, the dichotomy between acquisition and participation should not be mistaken for the well-known distinction between individualist and social perspectives on learning. The examples here have shown that the former division crosses the demarcation lines established by the latter. According to the distinction proposed in this article, theories that speak about reception of knowledge and those that view learning as internalization of socially established concepts belong to the same category (AM), whereas on the individual / social axis, they must be placed at opposite poles. Whereas the social dimension is salient in the PM, it is not necessarily absent from the theories dominated by the AM. It is important to understand that the two distinctions were made according to different criteria: While the acquisition / participation division is ontological in nature and draws on two radically different answers to the fundamental question, "What is this thing called learning?," the individual / social dichotomy does not imply a controversy as to the definition of learning, but rather rests on differing visions of the mechanism of learning. A schematic comparison between the two is presented in Table 1.

² Harbingers of revolution tend to believe that the old and the new are mutually exclusive. It is only natural that profound change like the one we are witnessing these days is marked by a dose of single-mindedness and zealotry. Often, one feels obliged to declare his or her exclusive devotion to the new metaphor if the other metaphor—the one by which we have been living for centuries—is ever to be made explicit and susceptible to critical scrutiny. As I declared at the outset, however, it is the aim of this article to show the dangers of such total, single-minded devotion to one metaphor.

Table 1
The Metaphorical Mappings

Acquisition metaphor		Participation metaphor
Individual enrichment	Goal of learning	Community building
Acquisition of something	Learning	Becoming a participant
Recipient (consumer), (re-)constructor	Student	Peripheral participant, apprentice
Provider, facilitator, mediator	Teacher	Expert participant, preserver of practice/discourse
Property, possession, commodity (individual, public)	Knowledge, concept	Aspect of practice/discourse/activity
Having, possessing	Knowing	Belonging, participating, communicating

[...]

Conclusion: One Metaphor Is Not Enough

The message of the above critical examination of the two basic metaphors for learning is rather confusing: It now seems that we can live neither with nor without either of them. In this concluding section, I wish to make it clear why it is essential that we try to live with both. Later, I make suggestions about the ways in which this seemingly impossible demand might be fulfilled after all.

Why Do We Need More Than One Metaphor?

The relative advantages of each of the two metaphors make it difficult to give up either of them: Each has something to offer that the other cannot provide. Moreover, relinquishing either the AM or the PM may have grave consequences, whereas metaphorical pluralism embraces a promise of a better research and a more satisfactory practice. The basic tension between seemingly conflicting metaphors is our protection against theoretical excesses, and is a source of power.

As was emphasized before, the metaphors we use should not be held responsible for unsatisfactory practices, but rather their interpretations. When a theory is translated into an instructional prescription, exclusivity becomes the worst enemy of success. Educational practices have an overpowering propensity for extreme, one-for-all practical recipes. A trendy mixture of constructivist, social-interactionist, and situationist approaches—which has much to do with the *participation metaphor* — is often translated into a total banishment of "teaching by telling," an imperative to make "cooperative learning" mandatory to all, and a complete delegitimatization of instruction that is not "problem-based" or not situated in a real-life context. But this means putting too much of a good thing into one pot. Because no two students have the same needs and no two teachers arrive at their best performance in the same way, theoretical exclusivity and didactic single-mindedness can be trusted to make even the best of educational ideas fail.

What is true about educational practice also holds for theories of learning. It seems that the most powerful research is the one that stands on more than one metaphorical leg (cf. Sfard,

1997). An adequate combination of the *acquisition* and *participation metaphors* would bring to the fore the advantages of each of them, while keeping their respective drawbacks at bay. Conversely, giving full exclusivity to one conceptual framework would be hazardous. Dictatorship of a single metaphor, like a dictatorship of a single ideology, may lead to theories that serve the interests of certain groups to the disadvantage of others. A metaphor that has been given hegemony serves as an exclusive basis for deciding what should count as "normal" and what is "anomalous," what should be viewed as "below average" rather than "above," and what should be regarded as "healthy" and what as "pathological." The exclusivity is often equated with certainty, whereas the very presence of a competing metaphor may be enough to disclose the arbitrary nature of some of the generally accepted classifications. This disclosure, therefore, has an immediate emancipatory effect. When two metaphors compete for attention and incessantly screen each other for possible weaknesses, there is a much better chance for producing a critical theory³ of learning (Geuss, 1981; Habermas, 1972). Such a theory would inquire after the true interests of all of the parties involved in the learning process and thus engage the research community in an endeavor likely to have a liberating and consolidating effect on those who learn and those who teach.

[...]

One point cannot be overstated: With all of the flexibility of the proposed multimetaphorical metaframework, plurality of metaphors does not imply that "anything goes;" neither does it result in a complete methodological freedom or in a reduced need for empirical evidence. To count as trustworthy, the resulting theories must still be experimentally testable and congruent with data. The only thing that changes is the relative status of data and theory. While traditionally, data were regarded as previous to, and independent of, theory, now it is assumed that they are already tinted by theory when we first set our eyes on them. As shown by the heated discussion on transfer, the very existence of "facts" may sometimes be a matter of a theoretical lens used by an observer. The relationship between theory and data is dialectic in that they have a tendency for generating each other. It is notable that the persuasive power of data may be confined to the paradigm within which they came into being. Because there is no such thing as "naked facts," the power of empirical findings may sometimes be lost in a transition from one framework to another. For that reason, empirical evidence is unlikely to serve as an effective weapon in paradigm wars.

The basic message of this article can now be put in a few sentences. As researchers, we seem to be doomed to living in a reality constructed from a variety of metaphors. We have to accept the fact that the metaphors we use while theorizing may be good enough to fit small areas, but none of them suffice to cover the entire field. In other words, we must learn to satisfy ourselves with only local sensemaking. A realistic thinker knows he or she has to give up the hope that the little patches of coherence will eventually combine into a consistent global theory. It seems that the sooner we accept the thought that our work is bound to produce a patchwork of metaphors rather than a unified, homogeneous theory of learning, the better for us and for those whose lives are likely to be affected by our work.

³ What came to be known as critical theories can be defined as conceptual frameworks that deal with human beings in a social context and "aim at emancipation and enlightenment, at making agents aware of hidden coercion, thereby freeing them from that coercion and putting them in a position to determine where their true interests lie" (Geuss, 1981, p. 55). While "theories in natural science are 'objectifying', critical theories are 'reflective'" (p. 2).