

Aspects of Constructivism

The key idea that sets constructivism apart from other theories of cognition was launched about sixty years ago by Jean Piaget. It was the idea that what we call *knowledge* does not and cannot have the purpose of producing representations of an independent reality, but has instead an *adaptive* function. This changed assessment of the cognitive activity entails an irrevocable break with the generally accepted epistemological tradition of Western civilization, according to which the knower must strive to attain a picture of the “real” world. While the revolutions in the physical sciences in this century have led to the realization that such a picture seems impossible even according to physical theory, most philosophers hang on to the belief that the progress of science will somehow lead to an approximation of the ultimate truth.

Throughout the ages, however, there have been thinkers who did not share such a belief.¹ Indeed, since the beginning of our history of ideas, the skeptics have formulated logically irrefutable arguments showing that if “true” knowledge is to represent a real world it could not be attained. Although they provided constant irritation to the philosophical establishment, it was always easy to make their arguments seem absurd by mentioning some of the wonderful things human knowledge had achieved. In ancient times one could point to the accurate predictions concerning eclipses and the movement of celestial bodies in general, and in our days there are not only the miracles of technology we use in everyday life, but there is also the overwhelming fact that a man was able to land on the moon. In the face of such successes it would, indeed, be ridiculous to question the validity of knowledge.

ADAPTATION INSTEAD OF REPRESENTATION

Yet, in spite of their power on the common sense level, the achievements of science and technology do not actually resolve the fundamental problem of knowledge. In order to appreciate this, one has to become aware of the fact that validity in our experiential world is not the same as “truth” in the philosopher’s absolute or ontological sense. It was, indeed, the skeptics themselves who helped to obscure this distinction. Their error did not lie in the logic of their arguments which are in fact irrefutable. But they failed to question the way in which what we know should be related to reality. It is here that Piaget’s use of the notion of adaptation opens a path that makes it possible to accept the skeptics’ logical conclusion without diminishing the obvious value of knowledge.

¹ An extensive review of this history can be found in chapter 1 of von Glaserfeld, 1995.

The concept of adaptation stems from biology and it indicates a particular relationship between living organisms or species and their environment. To say that they are adapted means no less but also no more than that they have been able to survive given the conditions and the constraints of the world in which they happen to be living.

In other words, they have managed to evolve a *fit* or, as I prefer to say, their physical characteristics and their ways of behaving have so far proven *viable* in their environment.

Piaget took the notion of adaptation out of the biological context and turned it into the cornerstone of his “genetic epistemology.” He had realized early on that whatever knowledge was, it was not a “copy” of reality. The relationship of viable biological organisms to their environment provided a means to reformulate the relationship between the cognitive subject’s conceptual structures and that subject’s experiential world. Knowledge, then, could be treated, not as a more or less accurate representation of external things, situations, and events, but rather as a mapping of actions and conceptual operations that had proven viable in the knowing subject’s experience.

The use Piaget makes of the notion of adaptation is therefore not the same as that suggested by the contemporary school of thought that goes by the name of “Evolutionary Epistemology.” Unlike this school that formed around the work of Konrad Lorenz, in Piaget’s constructivist theory one cannot draw conclusions about the character of the real world from an organism’s adaptedness or the viability of schemes of action. In his view, what we see, hear, and feel, i.e. our sensory world, is the result of our own perceptual activities and therefore specific to our ways of perceiving and conceiving. Knowledge, for him, arises from actions and the agent’s reflection upon them. The actions take place in an environment and are grounded on and directed at objects that constitute the organism’s experiential world, not “things in themselves” that have an independent existence. Hence, when Piaget speaks of *interaction*, this does not imply an organism that interacts with objects as they “really” are, but rather a cognitive subject that is dealing with previously constructed perceptual and conceptual structures.

THE CONCEPT OF ENVIRONMENT

From this point of view, the notion of *environment* is obviously not the ordinary one. In the common sense description of our world, the environment is what surrounds all of us and we think of it as existing as such, whether we happen to be in it or not. In the constructivist model, “environment” has two quite distinct meanings. On the one hand, when we speak of ourselves, it refers to the totality of permanent objects and their relations that we have abstracted from the flow of our experience. On the other, whenever we focus our attention on a particular item, “environment” refers to the surroundings of the item we have isolated, and we tend to forget that both the item and its surroundings are parts of our own experiential field and not an observer independent “objective” world.

This, I believe, is a crucial aspect to consider if we want to approach teaching and education from the constructivist position. Too often teaching strategies and procedures seem to spring from the naive assumption that what we ourselves perceive and infer from our perceptions is there, ready-made, for the students to pick up, if only they had the will to do so. This overlooks the basic point that the way we segment the flow of our experience, and the way we relate the pieces we have isolated, is and necessarily remains an essentially subjective matter. Hence, when we intend to stimulate and enhance a student’s learning, we cannot afford to forget that knowledge does not exist outside a person’s mind.

This issue has recently been somewhat confused by talk of “shared knowledge” and “shared meanings.” Such talk is often misleading because there are strikingly different ways of *sharing*. If two people share a room, there is one room and both live in it. If they share a bowl

of cherries, none of the cherries is eaten by both persons. This is an important difference, and it has to be remembered when one speaks of “shared meanings.” The conceptual structures that constitute meanings or knowledge are not entities that could be used alternatively by different individuals. They are constructs that each user has to build up for him- or herself. And because they are individual constructs, one can never say whether or not two people have produced the same. At best one may observe that in a given number of situations their constructs seem to function in the same way, i.e. they seem *compatible*.

That is why those who are stressing the social dimension of language and knowledge would do well to use Paul Cobb’s expression “taken-as-shared” (Cobb, 1991), which accentuates the subjective aspect of the situation. For it is one thing to assert that, as far as one’s experience goes, the meaning others attribute to a word seems to be compatible with one’s own, but quite another to assume that it has to be the same.

THE CONSTRUCTION OF MEANING

The mutual compatibility in our use of words and language is, of course, the result of social interaction. The process that leads to such compatibility, however, is not one of giving, taking, or sharing meanings as an existing commodity, but rather one of gradual accommodation that achieves a *relative* fit. Any observer of a child acquiring new items of vocabulary will notice that the meaning the child attributes to a new word is idiosyncratic in the sense that it comprises either more or less than the adult speaker of the language intends. Only repeated use and failures to achieve the desired response will bring about adjustments.

As I have said many times, the need to adjust what one considers the “correct” meanings of the words one uses does not end with childhood. It happens over and over again that we discover, after many years of successfully using a given word, that we use it in a situation where the meaning we have attributed to it does not seem compatible with the meaning it appears to have for other users of the language. A dictionary will in many cases resolve the problem — and, in doing so, confirm the illusion that meanings are, after all, fixed entities that do not depend on individual usage. But a moment’s thought on *how* anyone acquires the meaning of a word would indeed reveal that this is an illusion. The dictionary presents definitions and examples that invariably consist of other words which give rise to *meanings* only in so far as the reader interprets them. Such interpretation can be done only in terms of the chunks of perceptual and conceptual experience the individual reader has associated with the dictionary’s words. Hence, no matter how one looks at it, an analysis of meanings always leads to individual experience and the social process of accommodating the links between words and chunks of that experience until the individual deems they are compatible with the usage and the linguistic and behavioral responses of others.

CONCLUSION

I want to suggest that, without going into the details of the radical change of epistemological perspective inherent in the move to constructivism, there are certain circumscribed areas in which a constructivist orientation can modify a teacher’s attitude. It could, for instance, bring home the realization that students perceive their environment in ways that may be very different from those intended by the educators. And this environment includes curriculum, textbooks, didactic props including computer programs and micro worlds, tasks they are given, and of course the teachers. This at once emphasizes the teachers’ need to construct a hypothetical model of the particular conceptual worlds of the students they are facing. Because only if one has some inkling as to the domains of experience, the concepts, and the conceptual

relations the students possess at the moment, can one hope to induce changes in their ways of thinking (cf. von Glasersfeld & Steffe, 1991).

Similarly, the consideration of how meanings are constituted and how, consequently, linguistic communication works, would dismantle the still widespread notion that conceptual knowledge can be transferred from teacher to student by the means of words. This is not to say that language is not important. In fact, it is the most powerful tool available to the teacher, but it does not transport meanings or concepts. Language enables the teacher to orient the students conceptual construction, by precluding certain pathways and making others more likely.

These are only two facets of the constructivist model, but they go a long way towards establishing the fundamental principle that learning is a constructive activity that the students themselves have to carry out. From this point of view, then, the task of the educator is not to dispense knowledge, but to provide students with opportunities and incentive to build it up.

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