The Reluctance to Change a Way of Thinking*

Michel de Montaigne is often listed among the sceptics, but this is a little bit misleading. He actually used his outstanding wit and erudition to defend the realm of religious faith against the threat of the *Pyrrhoniens*, the thinkers who had rediscovered Sextus Empiricus and his account of Pyrrho, the father of scepticism in the Hellenic world. Montaigne merely cut down to size the efforts of human reason. He put it as concisely as one can:

> *La peste de l'homme, c'est l'opinion de savoir.*[1]

The translation that seems the most adequate to me would be:

Mankind's plague is the conceit of knowing.

Radical constructivism is an effort to eliminate that conceit. It does not deny the possibility of knowing, but it strives to show that knowledge is not the commodity the tradition of Western philosophy would have us believe. Indeed, constructivism is a theory of active knowing, not a conventional epistemology that treats knowledge as an embodiment of Truth that reflects the world "in itself", independent of the knower. Indeed, the two basic principles of radical constructivism are:

1) Knowledge is not passively received either through the senses or by way of communication, but it is actively built up by the cognizing subject.

2) The function of cognition is adaptive and serves the subject's organization of the experiential world, not the discovery of an objective ontological reality.

To adopt these two principles means to relinquish the mainstays of an inveterate conceptual network. It means getting out of habitual pathways and reconceptualizing a different rational view of the world. In short, it involves a good deal of thinking and, as Bertrand Russell once said, people would rather die than think, and they do.

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One of the differences between science and religion, we were told in school, is that religion is founded on a dogma that is absolute and immutable because it stems from divine revelation, whereas science is tentative because it develops theories that are always open to refutation by new findings or novel experiments. Scientists, therefore, are supposed to be open-minded and, indeed, to welcome the solution of stubborn problems, even if the new solutions entail a change of thinking and the demise of concepts that seemed well established in the past.

A look at the history of scientific ideas, however, quickly shows that scientists do not always live up to this ideal open-mindedness. The concepts and methods they have grown up with frequently seem to be as unshakable as any matter of religious faith and the perpetrators of innovation tend to be treated as heretics. This happened to Darwin and his theory of evolution, to Einstein when he first published the theory of relativity, and it happened to Alfred Wegener when he suggested the idea of continental drift. In these spectacular instances the break with tradition advocated by the new theory was apparently unmistakable and, consequently, triggered violent indignation on the part of those who were anxious to maintain the established dogma.

In philosophy, perhaps because philosophers work in relative isolation, the pattern has occasionally been different. The constructivist approach to the problems of epistemology is a case in point. When Giambattista Vico published his revolutionary treatise in 1710, there was a tiny ripple of reaction (cf. the review in *Giornale de' Letterati d'Italia* of 1711), but, perhaps because he was still writing in Latin, his treatise did not have a wide circulation and certainly did not create international waves.[2]

In the case of Piaget's first constructivist exposition, the lack of reaction can, I think, be explained only by a general lack of understanding and, consequently, misinterpretation. In the English-speaking world, misinterpretation was enhanced by some truly appalling translations.

La construction du reel chez l'enfant (The construction of reality in the child) is a difficult book. It is divided into five sections that treat different aspects of one and the same development and the reader is left with the task of integrating novel conceptions of physical objects, space, time, causality, and the universe we find ourselves living in, into a coherent model of the world. This is a formidable task. If the summaries of Piagetian thinking one finds today in most psychology textbooks is an indication, one must conclude that many readers managed to avoid it.

Piaget's theory of development, conveniently, offers a model for the frequent phenomenon of misinterpretation. It goes under the name "assimilation" and is itself among the widely misunderstood concepts of Piagetian theory. One reason for this stems from the fact that "assimilation" is a conceptual postulate whose explanatory use ranges from the unconscious to the deliberate. When a subject assimilates unconsciously, it is obviously not aware of its assimilation and the fact that it assimilates is necessarily an observer's assessment. Though this aspect is often overlooked by developmental psychologists, it has important consequences for the theory of cognitive development. It may therefore be helpful to give examples to illustrate the two extreme forms of assimilation.

When the nail that holds up the wire to my computer falls out of the wall in my study and I use my shoe to hammer it in again, I am deliberately assimilating the shoe to the function of a hammer. It may work, or it may not, but even if it does work I am not led to believe that the shoe is a hammer. In contrast, a child that has just begun to associate two or three visual characteristics, such as four legs, a tail, and fur, with utterances of the word "dog", may well utter that word when a new visual experience allows her to see these three characteristics. A psychologist who witnesses this, may smile and say: "Ah, you see, she assimilates the lamb to her concept of dog!" He will be quite right, of course, in making this assessment; but he will be wrong if he believes

that the child's utterance requires some special activity that is called "assimilation". From the child's point of view, given her criteria for using the word "dog", the lamb is a dog, and she has no reason to modify her categorization until some unexpected event creates a perturbation. Only when the new item behaves in a way that seems undog-like to her, or when someone says "No, dear, this is a lamb", will the child have occasion to accommodate, i.e., to look for a distinguishing characteristic and, if one can be found, to create a new conceptual category called "lamb".

This pattern of maintaining categorizations, concepts, and, indeed, whole theories until some experience makes their adequacy questionable, is a universal pattern from the constructivist point of view. The difference is that, where theories and concepts that have proved useful in the past are concerned, there is a considerable vested interest in maintaining the status quo. That is to say, the proponents of a theory will assimilate new experiences as long as they possibly can, even in the face of considerable perturbations.

Silvio Ceccato, the Italian pioneer in the analysis of mental operations and construction, once after a public discussion of his theory, overheard an aged philosopher say: "If Ceccato were right, the rest of us would be fools!"[3] Most of the readers of the works of Piaget and the contemporary constructivists are not as direct and outspoken. Instead they desperately try to assimilate what they read and hear, disregarding all sorts of clues and bending the interpretation of words to their own notions; and when this proves impossible, they conclude that the author is contradicting himself, because what he says is no longer compatible with their own conceptual construction.

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The most frequent objection to radical constructivism takes the form of discarding it as a kind of solipsism. It is the same objection that George Berkeley had to contend with, and what it claims is as inappropriate in our case as it was in his. The title of Berkeley's major epistemological work was A treatise concerning the principles of human knowledge. If one keeps that title in mind, it will be clear that when he declares "esse est percipi" (to be is to be perceived), the being he is talking about is the only one the human knower can conceive of, and that is being in the world of experience, being constituted by the kind of permanence that results from invariants created by an experiencer's successful assimilation. But his opponents, just as today's critics of constructivism, reacted as though he had been talking about the "world-in-itself" rather than about the principles of human knowledge.

It is a strange coincidence that Berkeley published his Treatise in the very same year that Vico published his constructivist manifesto. Both authors were concerned with the human activity of knowing and both had strong ties with the religious dogma that claims an absolute, eternal order of the universe. Their way of reconciling their blatantly subjectivist theories of knowledge with the requirement of an immutable objective world were parallel and equally ingenious. For Berkeley the unity and permanence of ontological existence was assured by God's perception which, because God is considered omniscient, was ubiquitous and all-encompassing. Vico, instead, maintained that, while the human mind could know only what the human mind itself had constructed, God knew the world as it is, because He had created it.

Radical constructivism is less imaginative and more pragmatic. It does not deny an ontological "reality" — it merely denies the human experiencer the possibility of acquiring a True representation of it. The human subject may meet that world only where a way of acting or a way of thinking fails to attain the desired goal — but in any such failure there is no way of deciding whether the lack of success is due to an insufficiency of the chosen approach or to an independent ontological obstacle. What we call "knowledge", then, is the map of paths of action and thought which, at that moment in the course of our experience, have turned out to be viable for us. Such a limitation of the scope of human understanding is, of course, considered dangerous heresy by all who, in spite of the sceptics age-old warnings, still cling to the hope that human reason will sooner or later unravel the mystery of the universe.

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Radical constructivism is unashamedly instrumentalist (in the philosophical sense of that term) and this must offend advocates of the maxim "Truth for Truth's sake". Consequently, they dismiss it as cheap materialism. But this, again, is inappropriate. The instrumentalism embodied by constructivism is not to be equated with materialism. The second principle listed above states that the function of the cognitive activity is adaptive. The concept of adaptation intended here is the basic biological concept in the theory of evolution. It refers to the fit with the environment, which is to say, every species or organism found alive and capable of reproducing must, by that very fact, be considered adapted at that moment in the history of living organisms. To be adapted, therefore, means no more and no less than to be viable.

For the observing biologist, of course, this viability refers to the fit with an external environment. For the constructivist, whose interest is focused exclusively on the cognitive domain in which there is no access to an external environment, viability and fit must always refer to the cognizing subject's experiential world.

This shift of meaning was most convincingly explained and demonstrated by Jakob von Uexküll in the early decades of this century. In his charming account (whose title was translated as Strolls through the environments of animals and men[4]), he showed that every living organism in fact creates two coordinated environments for itself: an environment of actions (*Wirkwelt*) and an environment of perception (*Merkwelt*). Both these environments are necessarily subjective, because the first depends on the particular organism's capabilities of acting, and the second on the range of the organism's sensory equipment.

Finally, it must be made clear that, while biologists may tend to think of viability and adaptedness in terms of differential reproduction, in the cognitive domain the two terms refer to the achievement and maintenance of internal equilibrium. For the constructivist, therefore, Knowledge has the function of eliminating perturbations; and the higher we move in the hierarchy of conceptual abstractions, the more the perturbations tend to be conceptual rather than material. This, obviously, is one of the features that make the constructivist approach interesting for therapists.

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There are other consequences of the constructivist approach to knowing that are sometimes met with indignation. If viability depends on the goals one has chosen-- goals that necessarily lie within one's world of experience — and on the particular methods adopted to attain them, it is clear that there will always be more than one way. And when a goal has been attained, this success must, therefore, never be interpreted as having discovered the way. This goes against the notion that repeated success in dealing with a problem proves that one has discovered the workings of an objective world. Solutions, from the constructivist perspective, are always relative — and this, in turn, makes clear that problems are not entities that lie about in the universe, independent of any experiencer. Instead, problems arise when obstacles block the way to a subject's goal.

This, I believe, is one of the constructivist insights that Lynn Hoffman formulates so elegantly when she speaks of the therapist's systemic conception of the family: "The system doesn't create the problem, the problem creates the system." From my recent experiences in educational research I would add that educators, too, should bear in mind the inherent relativity of problems. When teachers begin a lesson by presenting "a problem" to their students, they often do not stop to consider that the pathway the problem obstructs may not hold much attraction for the students in any case.

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Much uneasiness is created also by the constructivist analysis of communication. In a theory that considers all knowledge the result of individual construction, the meaning of signals, signs, symbols, and language cannot be anything but subjective. Yet, language cannot be altogether private because we all use it with more or less success in what we usually call communication. This looks like a paradox, but that appearance dissolves as soon as we begin to see linguistic communication as just another form of mutually tuned interaction that arises in much the same way as the coordinated movements of a pair of dancers.

The example of the child's "inappropriate" use of the word "dog" that leads to a perturbation and leads to an accommodation and to the formation of a new conceptual structure to associate with the word "lamb" is not very different from a dancer making an "inappropriate step, treading on his partner's toes, and consequently modifying his motor pattern. In the case of the child's vocabulary, the experiential sequence of accommodation triggered by the unsuccessful use of a word, provides a model, at one and the same time, for the acquisition of new concepts and for the construction of lexical meaning. Without going into the details of the process that links the experience of a thing with the experience of a word, it should be clear that both these items are composed of elements that are part of the acting subject's experiential world and are, therefore, determined by what the subject attends to and how the subject perceives and conceives it.

What makes this approach seem so unacceptable is its incompatibility with the traditional notion that, when we speak or write, the words and sentences contain the meanings we have in mind and carry them from a speaker or writer to a listener or reader, as though meanings were things that one could wrap in sounds or graphic marks at one end, in order to have them unwrapped at the other. It does not take much reflection to realize that this is not how communication can work. Yet, to deny

that meanings are essentially generalized representations of external referents goes against the venerable philosophical notion of objective denotation.

However, even if we discount the philosophers' objection, because it stems from a realist epistemology which we believe to have successfully dismantled, we shall have to explain how it comes about that, by and large, linguistic communication works fairly well. This successful functioning may seem surprising, given our assumption that meanings are subjective constructs. The constructivist answer to this question is very simple and derives directly from the basic assumption of the instrumentality of human action, be it physical, conceptual, or communicatory. Just as our concepts are shaped, modified, and discarded according to how well they serve us in our conceptual schemes, so the semantic connections between words and concepts are shaped and modified by success and failure in the continual social interactions with speakers of our language. In fact, the process of accommodation and adaptation of the meaning of words and linguistic expressions continues for each of us throughout our lives, and no matter how long we have spoken the language, there will still be occasions when we experience a perturbation and realize that we have been using a word in a way that turns out to be idiosyncratic in some particular respect.

One of the revolutionary aspects of the constructivist approach to communication, then, is that it drastically changes the concept of "understanding". There can no longer be the claim that the meanings of words must be shared by the users of a language because these meanings are derived from fixed, external entities. Instead, here once more, there is at best a relation of fit. That is to say, we tend to conclude that what we have said is understood by the listener if the way he or she reacts to our utterance seems compatible with our expectations. But as we discover only too often, what seemed understanding at first, disintegrates when a seemingly unproblematic utterance leads to quite unexpected reactions in a new situation.

Understanding what other speakers mean by what they have said, therefore, cannot possibly be explained by the assumption that we have managed to replicate in our heads the identical conceptual structures they intended to "express". At best we may come to the conclusion that our interpretation of their words and sentences seems compatible with the model of their thinking and acting that we have built up in the course of our interactions with them.

Our knowledge of others, in short, is essentially no different from our knowledge of the world. Because it is the result of our own perceiving and conceiving, it cannot be a true representation of independently existing entities; but insofar as we can use it as a basis for further acting and thinking it constitutes a viable model of these very special elements of our experiential world.

Footnotes

*   This paper attempts to reformulate the basic ideas of the constructivist theory of knowing in the light of the most common objections the theory has met in the course of its development as an independent epistemology during the past two decades. It will be published in the *Irish Journal of Psychology* under the title *Radical Constructivism – Two Perspectives*, together with a second paper by Lynn Hoffman that documents and discusses the theory's application and implementation in the practice of family therapy.

1. Montaigne wrote this in his *Apologie de Raymond Sebond* (1575–76) and it can be found on p.139 of volume 2 of the complete edition of his *Essais*, edited by Pierre Michel (Paris; Librairie Generale Francaise, 1972).

2. Vico's *Scienza Nuova* (The new science), still considered his main work, was published fifteen years later and spanned a horizon sufficiently wide to become the seedbed of new disciplines, such as the philosophy of history and sociology. His theory of knowledge, though firmly embedded in this later work, could now be conveniently disregarded in favor of the wealth of his original ideas in areas which, at the time, had as yet no catechism of established ways of thinking.

3. I owe this anecdote to a personal communication. Silvio Ceccato told it to me shortly after the event, sometime about 1960.

4. Jakob von Uexküll (with Georg Kriszat), *Streifzüge durch die Umwelten von Tieren und Menschen*. Frankfurt am Main: Fischer, 1970 (originally published in 1933).

5. A fuller account of the process of individual semantic development will be found in my essay *On the concept of interpretation*, Poetics, 12, pp. 207–218, 1983.