Constructivism, Culture, and Cognitive Development

Which Kinds of Scheme for a Cultural Psychologist?

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► **Purpose** – My first purpose is to present an epistemological and ideological analysis of various conceptions of the mind–culture relationship and to state why it is fruitless to set them against each other. My second purpose is to answer the following two questions within the framework of cultural cognitive development: (1) How do I understand and explain the interaction between two cultural actors, one of whom is myself? (2) How do I model cultural intersubjectivity? Addressing these two aims, I want to make the nature of observer participation explicit to myself, then to the reader.
► **Design** – I describe the personal schemes I use in my cross-cultural research. After defining and comparing different conceptual and methodological instruments, I go on to argue in favor of an experimental methodological approach based on a naturalistic constructivist epistemological framework. ► **Findings** – Among the potential ontological and epistemological conceptions related to the human mind, I consciously argue for a naturalistic ontology and a constructivist epistemology. In line with this philosophical view, the knowledge on the cognitive development of children pertaining to different cultures appears as my personal scheme's production. Such production is a permanent object of debate in the scientific community and in the wider community of studied subjects. ► **Original** – The ideas and concepts developed in the present paper are neither new nor innovative. I relate the conceptual shift from a positivist to a radical constructivist epistemology that was necessary in order for me to be able to study the relationship between culture and children's cognitive development.
► **Implications**: While the present discussion may not be innovative from a radical constructivist point of view, it is so from the point of view of mainstream developmental psychology. ► **Key words** – Cross-cultural psychology, cultural psychology, epistemology, ideology, theory, methodology, radical constructivism.

The philosopher John Searle is one of the most influential and adamant critics of cognitivism and artificial intelligence (Dupuy 2000). One of his assertions is that every state of consciousness is someone's conscious state (Searle 1995, 2004). In this statement, the author is emphasizing the fact that the subjectivity of a person who is producing knowledge is always a factor, even when this knowledge is scientific. Accordingly, given that the reflections presented below were formulated from the author's subjective point of view, and despite the fact that it is not customary in cognitive and developmental mainstream psychology, the beginning and end of this paper are written in the first person.

I spent over twenty years of my life in Tahiti, in the South Sea Islands of the South Pacific. Among the events that marked that period was my adoption (*fa'a'amu*) by a Polynesian family. This gave me the opportunity to have a second mother and another brother. It has always been obvious when comparing this brother and myself that my skin color is different from his, that I do not speak his everyday language (*reo ma'ohi*) as well as he does, and that I do not believe in the spirits in which he believes. When he became a deacon of the Protestant Church of Polynesia, I became a doctor of psychology at Paris University. In short, there has always been a difference between us that is racial, ethnic and cultural. This difference, which we have always objectified by comparing ourselves with each other, has never been a problem. In addition to being a source of amusement to both of us, we experience it as being mutually enriching, even today.

On various occasions since I became a lecturer and researcher at Toulouse University, France, I have been told that the cultural comparative psychology that guides my teaching and research could be regarded as racist and that it may not be "genuinely" (cross-)cultural psychology. I have often wondered why views of my personal history "over there" and my scientific methods "over here" should differ to that extent. This has led me to question the epistemological foundations of cross-cultural psychology in general, and the manner in which I practice it in particular. Many of the elements of analysis I use are neither new nor innovative. What may be new, however, is my determination to go beyond ideological antagonisms, like Bruner (2000a), and to publicly present the conceptual and methodological instruments or tools I use to pursue my research goals.

From the radical constructivist point of view (Glasersfeld 1995) adopted here, it is obvious that the schemes consciously adopted by cultural psychologists, while allowing them to gain some sort of access to the world by constructing it, are themselves constructed *via* the subjectivity of those same cultural psychologists. When the knowledge of the world that originally comes from the schemes' production is permanently and rationally criticized in the public space (Popper 1998), it becomes an objective knowledge that is not an arbitrary one. Relative to this process, these schemes create the psychological reality of the observed subject, just as they create their own cognitive tools. Thus, the main idea is to regard the observer (i.e.,

myself) as an integral part of the object under scrutiny and to study his or her own "cultural representations" (Laplantine 1995). Devereux (1980), for instance, argues that the ideology of any Western scholar strongly influences his or her work, but is difficult to discern, either because the scholar takes no interest in it or because he or she is not even conscious of it. An essential facet of my research thus consists in making my schemes as a cultural psychologist explicit.

My first aim here is to attempt an epistemological and ideological analysis of various conceptions of the mind–culture relationship (i.e., "cross-cultural," "comparative," "cultural," "indigenous," "intercultural," etc.) and to state why it is fruitless to set them against each other, for as Dasen (2001) has stressed, they are actually complementary. However, we have yet to demonstrate precisely how they complement each other or, better still, devise an integrated model. Proposals along this line are in fact continuously being made and discussed (see Adamopoulos & Lonner 2001; Berry 1999; Bredendiek & Krewer 2001; Helfrich 1999; Krewer 1999; Lonner 1999; Poortinga 1997; Saraswathi 1998).

The construction of knowledge about cultural otherness has long been a familiar issue for anthropologists (Augé 1994; Devereux 1980; Kilani 1994; Laplantine 1995). With regard to psychology, Bredendiek and Krewer (2001) state that an integrated model of cultural otherness must answer the following questions: (1) How and at what level of complexity do subjects understand and explain the interaction between two cultural actors? (2) How do subjects construct (cross- and inter)cultural intersubjectivity? That is, what are their (cross- and inter)cultural strategies? The ideal of (cross- and inter)culturality is defined as an active negotiation with others in order to arrive jointly at potential ways of integrating each other's perspectives.

My second aim is to answer these two questions, but within the framework of my own research goals. As such, the above two questions become: (1) How and at what level of complexity do I understand and explain the interaction between two cultural actors, one of whom is myself? (2) How do I construct (cross- and inter)cultural intersubjectivity? That is, what is my (cross- and inter)cultural strategy?

This paper is divided into three main parts.

(1) The first one seeks to define classic *(cross-)cultural psychology* and the underlying notion of *culture*. There is an epistemological paradox in the fact that while comparative cultural psychology appears to be positivist (i.e., culture is taken as an independent variable), Neo-Piagetian developmental psychology is normally constructivist (i.e., the child and the cultural knowledge emerge together). To go beyond this paradox, the first step is to comprehend these two divergent *epistemologies*, after which one has to choose between the two. I have chosen a radical constructivist epistemology.

(2) Just as the child and his or her knowledge of the world co-emerge so, too, do the psychologist and his or her scientific knowledge of the developing child. Accordingly, in the second part of the paper, I examine several conceptions related to the ontology of my own *subjectivity* and that of the children who produce scientific and everyday knowledge. From these, I have consciously chosen a naturalistic conception (i.e., non-dualistic). This choice implies a naturalistic model of *intersubjectivity*, particularly when a cultural psychologist (i.e., myself) is observing a child who is observing the world. This observation relies on the activation of three main types of schemes (i.e., *ideological*, *theoretical*, *methodological*).

(3) These three main types of schemes are presented in the last part of the paper.

The ideas and concepts themselves developed in the present paper are neither new nor innovative. However, I relate the conceptual shift from a positivist to a radical constructivist epistemology that was necessary *for me* to be able to model the relationship between culture and children's cognitive development (see Troadec 2007).

Cross-cultural psychology

The first step is to determine what cross-cultural psychology actually is. It is traditional to propose a typology of approaches to the mind–culture relationship in terms of three different perspectives (Adamopoulos & Lonner 2001; Berry 1997; Jahoda & Krewer 1997; Lonner & Adamopoulos 1997; Poortinga 1997). All three seem to be rooted in a desire to go beyond the age-old opposition between a universalistic tendency and a relativistic or culturalistic tendency (Berry 1984; Bril & Lehalle 1988; Jahoda & Krewer 1997). According to Bredendiek and Krewer (2001), these views are highly divergent today. They describe them as follows: (1) the particularistic or relativistic view, which regards the cultural universe as the human mind, thus making all comparisons impossible; (2) the universalistic view, which focuses on the unity of the human mind, meaning that culture is just a source of variation; (3) the constructivist view, where cultural otherness is the product of an encounter and a process of meaning construction that occurs in a communicative situation. Dasen (2000) proposes another type of organization, but one that also divides research into three types: (1) studies of a psychological phenomenon within a single culture; (2) studies (comparative or otherwise) of a psychological phenomenon in several cultures; (3) studies of the processes brought into play when people of different cultural origins meet.

In practice, the above categorizations can prove problematic. According to Dasen (2001), they may even be "erroneous," in that they create an antagonism between "us," the ones who are right, and "them," the ones who are wrong. Social psychologists have long demonstrated the effects of categorization processes on intergroup interactions (Doise 1979; Gudykunst & Bond 1997; Leyens, Yzerbyt & Schadron 1996), and their findings would also appear to explain relations between researchers in the social sciences. Categorization processes are responsible for homogenizing and accrediting the ingroup, and for granting it a particular label, at the same time as they differentiate the ingroup from outgroups, discrediting the latter and assigning them other labels. Categorization thus creates exclusion zones. While this phenomenon may be human, it can be unhelpful, if not harmful to scientific research. According to Segall (1993), for example, who analyzed the opposition between comparative psychology (see Berry, Poortinga, Segall & Dasen 2002; Segall, Dasen, Berry & Poortinga 1999) and cultural psychology (see Cole 1996; Miller 1997; Ratner 1997; Shweder 1990), a careful look at these two fields reveals that the differences between "us" and "them" are not

as marked as they are assumed to be. Similarly, Yamaguchi (2002) has shown that there are very few differences between cultural psychology and indigenous psychology (see Berry 1993; Kim 2001; Kim & Berry 1993; Sinha 1997). Nevertheless, one thing that clearly differentiates between the three "types" of conception is how they define the notion of culture.

Culture

On the basis of a domain-specific cognitive disposition referred to as naive sociology (Hirschfeld & Gelman 1994; Sperber & Hirschfeld 1999, 2004), it now appears that races, ethnic groups and cultures – all key concepts in cross-cultural research – are historical and cultural constructions. Accordingly, there is no such thing as a race in and of itself (Segall 1999), an ethnic group in and of itself (Breton 1981), or a culture in and of itself (Anselme 2001). These notions are not "objects" that exist more or less outside individuals, but concepts that are constructed by those same individuals. They are dependent upon conscious observers and, again, are constructed for the purpose of differentiating "us" from "them." According to Latouche (1999), even though it may seem trivial, it is important to state that for a race, ethnic group or culture to exist, there must be at least two of them in each case. Every culture is, in fact, constructed through the assimilation of external contributions and differentiation from others. Races, ethnic groups and cultures therefore always imply plurality.

Intermixing has, however, existed for a long time in all human societies (Gruzinski 1999). Accordingly, sociologists have shown that all contemporary societies are multicultural. The typology presented above is thus only of theoretical interest, serving merely to clarify scientific or other kinds of discourse. It is based on the (rarely consensual) definition that is posited for the notion of culture (see Cuche 1996, 2002; Jahoda 2002). Culture, then, is a cultural phenomenon. However, it may happen that the constructed nature of races, ethnic groups and cultures is forgotten and they end up being taken for an objective reality that exists in its own right. This is the case in a classic or objectivistic conception of science, where researchers are seen as having a neutral attitude that does not influence the observations they make: researchers are no more than the objective revealers of their observations.

As mentioned in the introduction, following in the footsteps of physicists, anthropologists have shown that this conception is erroneous. "We are never objective witnesses observing objects, but subjects observing other subjects." (Laplantine 1995, p. 168; our translation). Researchers must therefore strive to make the interactions they observe between different subjects as conscious as possible, or they will run the risk of ethnocentric projection because they will implicitly and uncontrollably compare their own representations with the observed facts (Dasen 1993b). As Bril and Lehalle (1988) noted, in a situation where a researcher is observing a subject, the meaning of the subject's discourse is always the product of a comparison with the researcher's own meanings. It seems quite fundamental to state the basis of this comparison or "*tertium comparationis*" (Krewer 1993, p. 85).

To conclude, the considerations we have just analyzed, namely (1) the definition of culture and (2) the role of the researcher in the interpretation of observed facts, would appear to be subtended by a fundamental debate, which continues to rage in the scientific community, as to the nature of the epistemological foundations of human scientific knowledge.

Epistemologies

Cross-cultural or comparative and cultural or indigenous psychologies divide the study of the relationship between culture and human development into two "camps." This opposition involves theoretical and methodological differences, but above all hinges on an epistemological difference. Krewer (1993) suggests that this difference pertains to the relationship between an object of knowledge and a cognizant subject. This opposition distinguishes between two great epistemological traditions – positivism and constructivism – and is evoked by Dasen (2000), whose schema proposes four possible types of research, rather than three. These can be placed under two main conceptual headings (see also Lucariello 1995): (1) a quantitative and nomothetic or positivist conception (mainstream psychology, comparative psychology, cross-cultural psychology); (2) a qualitative and idiographic or constructivist conception (acculturation psychology, cultural psychology, indigenous psychology).

However, according to Dasen (2000), insofar as the cross-cultural comparative psychology that provides the framework for my research appears to be of positivist inspiration, whereas the conception of cognitive development in the Piagetian and Neo-Piagetian traditions is constructivist, it is useful to analyze the paradox of whether the former is a valid paradigm for studying the latter. Indeed, this paradox was probably the trigger for the reflections set out in this paper. As Glasersfeld – a radical constructivist – notes,

> "…the two views of science and the cognitive processes that produce it are incompatible. On the one side, there are the realists [or positivists], for whom the essence of science lies in the collecting of 'objective' data which, they believe, speak for themselves and automatically provide true explanations. Knowledge, for them, is the result of discovery. On the other side is Piaget's constructivism, for which all science is the product of a thinking mind's conceptualization. From this perspective, knowledge does not 'represent' or depict an independent reality but is a collection of inventions that happen to fit the world as it is experienced […] The constructivists who follow Piaget, attempt to think in a way that includes the observer." (Glasersfeld 1997, p. 297 and p. 305).

So, to begin with, and because we are curious, what exactly is a constructivist epistemology? Constructivism is defined as a discourse about the foundations of scientific knowledge (Le Moigne 1994, 1995). It is also a general theory of knowledge. In particular, it is opposed to the dominant discourse of Western science, that is, positivism (Glasersfeld 1999b; Hayward & Varela 1995). As described by Le Moigne (1995), constructivist epistemologies are based on the hypothesis that existing and knowable reality is constructed by observers, who thereby become its builders or "modelers." This is the cognitive or artificial construction process that is so familiar to mathematicians, who make objects (geometric figures, numbers, symbolic operators) real by construction. Knowledge is thus

dependent upon the observer's schemes and models. This hypothesis may not be specific to the constructivist paradigm alone, but its following complement is: the observer's representation of an object constructs the knowledge that it thereby constitutes. In the quotation below, Piaget famously expressed the inseparability of the act of knowing an object from the act of being aware that one is in the process of knowing that object.

> "The intelligence [i.e., the action of knowing] begins neither by knowledge of oneself [i.e., assimilation], nor by that of things as such [i.e., accommodation], but by that of their interaction; it is by orienting oneself simultaneously toward the two poles of this interaction that it [i.e., the intelligence] organizes the world by organizing itself." (Piaget 1937, p. 311; my translation).

However, Glasersfeld (2001) adds the following remark:

> "I had been teaching Genetic Epistemology for quite some time at an American university where I had to use English texts, before it dawned on me that this translation was unsatisfactory. The English word 'intelligence' does not designate an active agent that can orient itself or organize things. To use it in this sense, is at best metaphorical. The word needed to convey what Piaget intended is 'mind'."

As Le Moigne (1995) notes, we can no longer separate knowledge from the intelligence (or mind or subjectivity) that produces it. Knowledge must therefore be defined as much by the process that builds it (that is, the schemes of the cognizant subject) as by the result of that process. To a certain extent, the present paper is an attempt to do just this. It should also be noted that moving from a positivist epistemology to a radical constructivist epistemology does not amount to revolutionizing science, but rather to modifying or changing the way one looks at knowledge. Ordinarily conceived of as the discovery or uncovering of preexisting objects, knowledge becomes the conceiving or invention of phenomena, be they artificial or non-artificial.

To conclude this discussion, if we acknowledge the complementary nature of the cross-cultural/positivistic and cultural/constructivist positions, how can we effectively combine them? We obviously need to discard a dualistic kind of reasoning, as it generates oppositions and creates mutual exclusions. In its place, we must attempt to invoke a line of thinking that joins and unites apparent oppositions without excluding them. A stimulating proposal was made along these lines by Morin (1990), under the heading of "complex thinking."

Subjectivity

Seeking to incorporate the observer's role into the observations he or she produces, that is, the role of the researcher's subjectivity or mind, implies having a clear definition of the observer's own conscious activity. The debate on this topic centers on the philosophy of mind (Dupuy 2000; Fisette & Poirier 2000). Searle (1995, 2004), for example, criticizes the two dominant traditions in the study of the mind, namely dualism and materialism. One of the ideas advocated by dualism is that there is an ontological difference between body and mind. Although it is ostensibly rejected by a substantial majority of psychologists, dualism (like positivism) lives on in numerous "disguised" forms. For example, Richelle (1997) highlights "the opposition between the biological level and the level of mental operations as built through sociohistorical processes" (p. 2) posited by the representatives of Vygotsky's historicocultural tradition, an *a priori* non-dualistic view (Bronckart, Clemence, Schneuwly & Schurmans 1996). This disguised form of dualism in fact grants socio-historical factors a status that is substantially distinct from biological ones.

Insofar as it is environmental stimuli and the subject's own intentionality that trigger the mental phenomena brought about by brain processes, mind–body dualism can no longer be a valid ontology. However, as Searle (1995, 2004) asks, why is it that the only alternative approach is reductive materialism? Why does materialism deny the existence of conscious, subjective mental states, reducing mental (epi)phenomena to neurophysiological processes alone? The cognitivist paradigm even postulates that "the brain and the mind are both a machine, and it is the same machine. The brain and the mind, then, are one" (Dupuy 2000, p. 32; my translation). Today's developing cognitive sciences, under the influence of positivist philosophy, thus exhibit a tendency to reduce psychological (epi)phenomena to neurobiological processes (Edelman 2004; Houdé, Mazoyer & Tzourio-Mazoyer 2002).

Searle (1995, 2004) maintains, on the contrary, that the human brain, like any other organ, is a biological system. A characteristic of this particular organ, however, is that it produces consciousness, that is, subjectivity or mind. The mental phenomena studied by psychologists are indeed caused by neurophysiological processes in the brain, but – at the same time – they are emergent properties that cannot be reduced to brain activity alone and are causal (see also Thompson & Varela 2001). Here, mental objects have a particular property that materialists seem to be reluctant to accept: subjectivity. It follows that the ontology of the mind is essentially an ontology in the first person. The result of this is that one cannot, in any way whatsoever, observe someone else's consciousness in isolation (Baerveldt & Verhegger 1999).

As an alternative to dualism and materialistic monism, Searle (1995, 2004) proposes a naturalism which differentiates between the intrinsic characteristics of the world, which are observer-independent (or objective) and characteristics that pertain to an observer, which are observer-dependent (or subjective). Searle disputes a non-reductionist conception of the human mind – the human mind is not just an epiphenomenon – according to which, intentional states emerge from the brain activity. Free will would originate from this emergent phenomenon. The author stresses that consciousness and intentionality are intrinsic characteristics of the human brain, i.e., objective, but that calculation (or computation) is observer-relative, i.e., subjective. While the brain is a biological machine that thinks, it also happens to compute, but the latter aspect is a question of a third person point of view (see also Varela 1989a, 1989b). Searle thus rejects an entire level of psychological causality (a mental cause would produce a behavioral effect) and asserts that there is nothing more in the brain, or in a computer, than a raw physical mechanism that produces a raw physical effect. The normative component, namely the computational interpretation, is external and relative to the observer. By that token, it is cultural, too. However, things are not always so clear-cut, even for those who subscribe to this the-

sis. Bruner (2000b) argues, for example, that while Piaget claimed to be a constructivist, he never dispelled the ambiguity about whether the normative operating structures he described lie "within" the child's repertoire of activities or "within" the conceptual repertoire of the theorist of the mind.

Moreover, this philosophical debate on the ontology of the mind may be nothing more than the West engaging in a "calm monologue" with itself (Laplantine 1995). In which case, maybe we should make room for what is sometimes called "ethnoscience" (Barreau 1990) or "everyday cognition" (Jahoda 1993). Instances of cross-cultural communication on the ontology of consciousness and its analytical methods are few and far between, although a debate that originated in philosophy (Jambet 1983) has now been taken up by the cognitive sciences and Buddhist philosophy, providing a fruitful opportunity to expose and compare two different cultures (Dalai- Lama 2000; Hayward & Varela 1995; Ricard & Thuan 2000; Varela, Thompson & Rosch 1993). However, according to Barreau (1990), while Western science has become the worldwide model of science – on account of its principles rather than its content – the question of its prominence and the coexistence of scientific cultures has yet to be settled. This question in turn raises the eminently delicate and possibly unanswerable question of how to weigh up these cultures' unequal qualities (Diamond 2000). How can one compare either a materialist or an emergentist monism with a dualism that asserts the existence of many entities: ancestor spirits, souls of divine essence, unconscious of natural origin? The only possible outlet appears to be a moderate relativism, framed within an ongoing (cross- and inter)cultural dialogue which, today, involves relativizing the West's "cannibalistic" universalism. According to Latouche (1999), even the notion of universal human rights draws upon a particular cultural conception of the individual.

Note that one possibility offered by scientific culture is to adopt a naturalistic ontology, which, like the choice of a radical constructivist epistemology, can only result from an act of faith or a position of principle. The conscious decision to make this choice – for it requires a decision – is justified by the difficulty of choosing and by the fact that in doing so, one runs the risk of helping to prove its falseness (Dupuy 2000). Indeed, certain authors still defend a dualistic conception (Eccles 1997), while others advocate a stricter materialism (Edelman 2004; Dennett 1993).

Some authors suppose a relationship between naturalism and constructivism. This link was already explicit for Piaget (1970) when he defined his genetic epistemology as "an epistemology which is naturalistic [i.e., not dualistic] without being positivist [i.e., constructivist]" (p. 10; my translation). However, like Bruner (2000b), Glasersfeld (1988) criticized Piagetian constructivism for its metaphysical realism. Indeed, there is a fundamental contradiction in Piaget's conception: if constructivism refers to an incessant production of new operations and structures, the crucial question is to "understand how these creations appear and why they become logically necessary although they are not predetermined." (Piaget in Piattelli-Palmarini 1979, p. 53; my translation). Although Bruner and Glasersfeld agree with the constructivist idea that intelligence organizes the world by organizing itself, they differ on the hypothetical requirements of the deductive form on which human intelligence would be based. In fact, Piaget believed in a preexisting world based on universal natural laws that the child gradually discovers by constructing logical internal structures.

The link between naturalism and radical (i.e., not realist) constructivism also underlies Varela's concepts of enaction and autopoietic systems: "enactive cognitive science is resonant with radical constructivism" (McGee 2005, p. 19). Like Glasersfeld, Varela did not postulate a preexisting world but a co-emergence *hic et nunc* of "who is knowing" and "what is known" (1989a, 1989b; Maturana & Varela 1994; Thompson & Varela 2001; Varela, Thompson & Rosch 1993). In the current paper, naturalism might refer to the ontology of mind ("What is the mind?"), while constructivism might refers to the epistemology of mind ("How we can know the mind?").

Intersubjectivity

As anthropologists have shown (Devereux 1980; Laplantine 1995), the situation in which a subject is observed by a researcher–subject implies intersubjectivity. What is more, the researcher disrupts the situation and, by his or her very presence, even creates a new one which, in turn, may also disturb the researcher him/herself. In order to make this situation – where two interacting subjectivities disrupt each other – as conscious as possible, let us attempt to model it.

We can retain from the naturalistic conception of consciousness the idea that mental states, or internal mental representations, are emergent properties of brain activity. On the concept of representation, Varela (1989a) makes a distinction between a strong version and a weaker one. The former, which has been strongly criticized, is based on the realistic belief that an external world preexists and can be known by the cognitive system through constructed internal mental representations (i.e., by re-presenting the world). The latter is pragmatic and does not postulate a preexisting world. Rather, it refers to any internal or external "object" which can be interpreted as being about an object or a state of affairs in the world other than itself (Searle 2004; Varela, Thompson & Rosch 1993). For instance, a particular mental or intentional state might be the (mental) representation of a beautiful sunset on the sea; a textbook might be the (public) representation of the genesis of children' knowledge; a story might be a (public) representation of cultural expectations; a map might be a (public) representation of a territory, and a watch, provided it is working properly, might be a (public) representation of the time. Thus, in the present article, "the term 'representation' should *not* be interpreted in the sense of *re*-presentation (as in 'to present again')" (Liben 2007, p. 196), but rather in the phenomenological sense of presentation (Varela, Thompson & Rosch 1993).

Mental (re)presentations are intrinsic to the brain, just as they are subjective because they originate in a personal experience. Mental states are thought to result from: (1) a belief box or memory; (2) inferential processes (Sperber 1996).

(1) Belief box or memory. According to Sperber (1996), beliefs produced by cognitive processes fall into two main categories: (a) intuitive beliefs about basic concepts, which originate in spontaneous, unconscious, perceptual and inferential processes; (b) reflective beliefs, which are interpretations of representations nested in the validating context of an intuitive belief. The latter beliefs, which

Observing subject **Mental representations (internal)** | Belief box and Inferential processes | Intuitive and Reflective beliefs	→ Assimilation process ——— Accommodation process ←	**Public expressions (external)** | Gestures Utterances Behaviors Attitudes Texts Natural and artificial artifacts etc.	← Assimilation process ——— Accommodation process →	Observed subject **Mental representations (internal)** | Belief box and Inferential processes | Intuitive and Reflective beliefs

Table 1. Model of a communication situation from a traditional cognitive science viewpoint.

include myths, ideologies and theories, are essentially the product of human communication.

(2) Unconscious inferential processes. Not all beliefs are represented or stored in the belief box. Some are unconsciously inferred *hic et nunc* from those currently available in the memory.

Today, it is well known that recollections do not exist in a permanent memory system in which they are stored and from which they can be retrieved. In the wake of Edelman's research, Rosenfield (1994) argued against functional localization and modularity theories, asserting that there is no conscious state specifically linked to objects, but rather, an internal state that only exists in relation to a particular context and that similar brain activities may correspond to the processing of different meanings. Memories are constructions or (re)creations. The "belief box" expression used in the present paper is metaphorical and is intended to mean that memory is *like* a storage box (Lakoff & Johnson 1999). Thus, "belief box" and "inferential processes" correspond to the cultural – or third person – point of view of an observing cognitive scientist who has set out to model them, and do not correspond to the actual reality of mental states (Searle 1995, 2004).

Basing themselves on a model of mental (re)presentations made up of a belief box and inferential processes, Sperber and Wilson (1989) argued that when two subjects interact for the purpose of communicating with each other, the internal mental states of one are not exactly replicated "in" the brain of the other *via* the external vectors of communication (gestures, language, etc.). Human communication generally leads to some degree of resemblance between the two internal representations, but not to identicalness. Moreover, the extent to which a mental representation is transformed can vary between two extremes, with duplication at one end and total loss of information at the other (Sperber 1996).

The naturalistic view is that so-called cultural or social representations can be defined as the mapping of particular mental states (or mental representations) onto certain material phenomena in the environment (or public representations) whose function is to represent those states. In this way, public representations only take on meaning when they are associated with mental representations (Sperber 1996). Borrowing Searle's (1995) example regarding public objects, the chemical makeup of the ink on this sheet of paper is intrinsic, but the fact that these are English words and sentences or other kinds of symbols is related to the observer – the person currently reading these words. It follows that cultural representations explain why certain public representations are associated with mental representations that appear to be widely "shared" by the members of a particular group. Researchers in the social sciences construct models of them, which, according to Sperber (1996), are designed to represent an abstract version of a family of mental and public representations. Culture, then, is the "precipitate of communication and cognition" within a human population. In other words, "something is cultural to the extent that it involves the stabilization of representations or productions by means of cognitively-mediated co-ordination among individuals" (Sperber 1999, p. 14). It should be noted that Searle's naturalism differs from Sperber's naturalism, which seems to be more reductionistic. For Sperber (1999), "it is only recently that we have become capable of actually describing material mechanisms that instantiate abstract semantic relationships [...] We can also begin to describe, in computational and neurological terms, the kind of material processes that realise [cognitive causal chains]" (p. 7).

Maintaining this naturalistic view not only of consciousness but also of culture (Sperber 1994, 1996, 1999; Sperber & Hirschfeld 1999, 2004), we can conclude that no subject – researcher or otherwise – has a means of experiencing another person's consciousness. Knowledge of it can therefore only be a model constructed from that person's public expressions and based on the activation of the researcher's mental states. This model may be suitable for describing the subjectivity of others, provided it corresponds to mental states that are recognized as such by the subjects being studied and that it is validated by the scientific community (Glasersfeld 1999a). Thus, it is now possible to propose a model that accounts for situations of communication between a researcher and an observed subject (Table 1).

As Laplantine (1995) tells us, our task is somehow to set up a social-interaction situation that is as conscious as possible. In this sit-

	Separation **Racism of exclusion** ("this one or that one")	Meeting **Racism of assimilation** ("this one and that one")
Diversity **Relativistic norm** ("we're all different")	Refusal of intermixing in order to preserve cultural purity	Absolute tolerance of the cultural difference, with refusal to compare
Unity **Universalistic norm** ("we're all the same")	Imperialism of one culture, postulated to be better than all others	Elimination of cultural differences by generalized intermixing

Table 2. Ideologies underlying different forms of racism.

	Separation **Study of differences between cultures** ("this one or that one")	Meeting **Study of contact between cultures** ("this one and that one")
Diversity **Relativistic norm** ("we're all different")	Value placed on cultural specificity in identity building	Respect for cultural differences and for the diversity of cultures
Unity **Universalistic norm** ("we're all the same")	Ranking of cultures based on a value scale	Value placed on cross-cultural meeting, which produces a new culture

Table 3. Ideologies underlying cross-cultural research.

uation, as proposed in cultural psychology, scientific knowledge is regarded as the product of a meaning-construction process carried out during a shared activity (Bruner 1991, 2000a, 2000b; Cole 1988, 1995, 1996; Ratner 1997, 2000; Shweder 1990, 2003). The diagram presented in Table 1 shows how a research paradigm can integrate the observer's subjectivity into the observation he or she produces. The need to project his or her schemes – designed to interpret facts and events, or in Piaget's terms, to assimilate them – forces the researcher to identify them as accurately as possible, in order to avert the constant risk of ethnocentrism (Dasen 1993b; Troadec 2001a, 2003a). Indeed, according to Latouche (1999), the impossibility of getting around the absolutes of one's culture, and thus the risk of being influenced by some degree of ethnocentrism, must be acknowledged. The question is not one of appeasing one's conscience, but simply of being aware of the relativeness of one's absolutes (i.e., one's schemes). These schemes need to be analyzed at three different levels: methodological, theoretical and, above all, ideological.

About ideology

Some of the many ideologies surrounding cross-cultural research pertain to cultural differences. It would appear that contemporary forms of racism no longer rest solely on the postulated inequality of biological races, but also on cultural differences (Bitterlin 1996). This situation therefore needs to be examined carefully. In sociology, racist ideology appears to be founded on relativistic and universalistic norms (Latouche 1999; Liauzu 1992; Taguieff 1987, 1997; Wieviorka 1993, 2001). Relativism provides the grounds for a differential racism based on the denial of a global humanity. It is expressed as the absolutization of group identities or differences (racial, ethnic, cultural or even national) in which embodied positive values are perceived. Universalism, on the other hand, is the source of a racism grounded in the denial of identity. It is expressed as varying degrees of contempt (which are translated into a scale of values) for particular cultural forms. It belittles or rejects, condemns and is suspicious of difference. However, these two opposing norms are jointly integrated into a "complex whole" in such a way that "racism is the absolute negation of difference [universalistic norm] and the absolute affirmation of difference [relativistic norm]" (Taguieff 1987, pp. 29–31; my translation). Two main forms of contemporary racism are derived from these ideologies (Table 2).

(1) Standard racism or racism of exclusion, founded on the separation of cultures, postulates an irreducible cultural authenticity associated with an imperialism of certain values which are claimed to be better than others. According to Gosselin and Ossebi (1994), the recognition of otherness here (relativistic norm) involves the establishment of a hierarchy placing all differences in a common order (universalistic norm).

(2) Anti-racism or racism of assimilation, founded on the meeting of cultures, postulates an absolute respect for cultural difference, associated with a generalized intermixing leading to a universal culture. According to Gosselin and Ossebi (1994), the rehabilitation of cultural difference in this case (relativistic norm) involves a conflict ensuing from a cross-cultural meeting and engenders integration into a whole (universalistic norm).

The relationship between cross-cultural research and racist ideology is determined by the fact that both domains are based on a combination of the same universalistic and relativistic norms (Bril & Lehalle 1988). However, in the case of cross-cultural and anthropological research, these norms have a positive social value (Table 3), whereas in the case of racism, they are deemed to have a negative social value (Table 2).

The contradiction between relativistic and universalistic norms, and the opposition between the dynamics of cultural separation and the dynamics of cutural meeting, appear to be managed on a daily basis by means of a type of dual processing.

1. From the angle of the separation of cultures:
   a. The valuing of cultural difference is opposed to the disappearance of cultural differences *via* intermixing and globalization;
   b. The establishment of a hierarchy of cultures is opposed to absolute tolerance of all cultural productions.
2. From the angle of the meeting of cultures:

a. Respect for cultural differences is opposed to the imperialism of a single culture;
b. The valuing of cross-cultural encounters is opposed to cultural purity, which separates and isolates cultures.

Influenced by Morin's complex-thinking paradigm (1990), my position consists of striving to go beyond the dualism of ideological oppositions by integrating the expressions of universalistic and relativistic norms and the dynamics of cultural meeting and separation in a positive and constructive manner. The road that runs between unbridled relativism – either the absolute refusal of others or the absolute acceptance of others – and "cannibalistic" universalism – either the imperialism of one culture or the creation of a universal culture – is a narrow one, but it surely exists and is worth looking for (Dasen 1993a; Latouche 1999).

Thus, cross-cultural research should be founded on: (1) recognition of cultural specificity, necessary to individual and collective identity-building processes, associated with the valuing of exchange and intermixing through cross-cultural encounters; and (2) respect for cultural differences and for the plurality of cultures, associated with the qualitative ranking of cultural productions on a scale of shared values. As each cultural group always prefers its own cultural productions even if they are not humanistic, any attempt to draw up a universal scale on which to measure shared human values will be fraught with difficulty. Even though many people prefer democracy rather than dictatorship, freedom rather than censorship, bodily integrity rather than excision, scientific knowledge rather than witchcraft, and so one, no absolute answer has yet been found to the question of what these universal shared values might be: it is a permanent and ongoing process of collective negotiation.

Applied to the field of child development, which is my line of research, the above two points become: (1) recognition that a child's development takes place in a particular sociocultural setting that constrains its stages and its forms, and that cross-cultural contact enables children to open up to the world; (2) recognition that there are cultural differences in child development and a plurality of childrearing practices, and that establishing a hierarchy of these practices makes it possible to favor childrearing conditions that will promote optimal development. Similarly, the definition of "optimal child development" will depends on one's preferred cultural conceptions. There is no absolute answer to the question of which theory of child development is "best": the psychologist's one or the one of the subjects involved in the project of cultural comparison? However, we have to take responsibility for our own cultural preferences: psychologists are not witch doctors or shamans and they build, for example, cognitive ability assessment scales, not initiatory dancing or hunting ability assessment scales (Troadec 2007). Again, any universal definition should arise from a permanent and ongoing process of collective negotiation.

About theory

It should be remembered that, within the framework of a constructivist epistemology, the specific role of scientificness is not to reflect that which is real, but to translate it into changing and refutable theories (Morin 1982). On the basis of verified and verifiable data, a theory is a construction of the mind (*via* a system of symbols) that is designed to fit that data as closely as possible. Made public and open to constant refutation, those theories that resist are the ones most suited to the current state of the art in a particular domain. While some of these constructions become dogmas nonetheless, a theory is only scientific if it is "biodegradable" (Morin 1982). In addition to its usefulness as a reference for studying cognitive development, Piaget's operatory theory is a remarkable example of "biodegradation" (see Houdé & Meljac 2000; Lautrey & Vergnaud 1997; Meljac, Voyazopoulos & Hatwell 1998; Netchine-Grynberg 1999; Troadec & Martinot 2003).

Armed with the above ideological conceptions, we can now turn our attention to the models and theories used by researchers. The choice of the three models presented below, which can be combined and interlocked to form a complex theoretical background, is justified by a specific research aim that is consciously inserted into a particular scientific context, not by some timeless quest for an "absolute" truth.

1. *Ecocultural model.* This model, proposed by Berry et al. (2002) and Segall et al. (1999), conceptualizes the relationship between contextual variables – ecosystems and sociopolitical organizations – and individual psychological characteristics – skill and performance. This relationship is established by way of transmission processes such as genetic inheritance, natural resources, culture and cultural change (see also Berry 1999; Dasen 2003; Georgas, van de Vijver & Berry 2004; Troadec 2001a).

2. *Developmental niches.* This model, proposed by Super and Harkness (1986, 1997), is a more specific conceptualization of the child-in-context. It accounts for systemic interactions between a child and his or her developmental context. The latter is constituted by the cultural representations of the child's caretakers and teachers (their ethnotheories), childrearing and educational practices in that culture, and the physical and social setting (see also Bril, Dasen, Sabatier & Krewer 1999; Bril & Lehalle 1988; Dasen 2003; Gardiner 2001; Sabatier & Dasen 2001; Troadec 2003a; Valsiner 2000b; Valsiner & Lawrence 1997).

3. *Neo-Piagetian theories.* According to Bideaud (1999), there are currently about ten theories that conceptualize individual cognitive development. Going beyond Piaget's constructivist view, they now acknowledge a number of specific predispositions observed in infants (Lécuyer 2001) and a powerful learning process (Bideaud 1999). These theories thus reestablish the importance of the environment (for reviews, see Bideaud & Houdé 1991; Dasen & Ribeaupierre 1987; Ribeaupierre 1997; Troadec & Martinot 2003).

It seems, however, that although Neo-Piagetian theories acknowledge the important role played by the context, most of them are unable to handle multiple contextual levels (ecological, sociopolitical, economic, historical, cultural, etc.) effectively, and mainly focus on analyzing the tasks children have to master (or microgenesis). On the other hand, while ecocultural and developmental-niche theories meet this requirement relatively well, they do not leave much room for complex modeling of the between- and within-individual variability of structures and representations. My current goal is to combine: (1) the ecocultural model; (2) developmental niches; (3) Neo-Piagetian theories. The process of putting this theoretical framework together

and implementing it, in support of a "local" constructivism (Jahoda 1986), can be seen at work in my studies on the development of categorization (Troadec 2001b), spatial orientation (Troadec, Martinot & Cottereau-Reiss 2002; Troadec 2003b) and temporal expressions (Ysos & Troadec 2005; Zarhbouch & Troadec 2006).

About methodology

Inspired by the universalistic norm, which postulates the unity of the human mind, mainstream psychology strives to demonstrate the anthropological universals that define human nature. The task of shedding light on the nature of man relies essentially on the experimental method (Mehler & Dupoux 1990). Now that the opposition between epistemological traditions (and their repercussions on the theories and methodologies that are used) has been evoked, and the choice of a radical constructivist approach has been made and justified, "some young researchers may be waiting to hear the name of the new method they are being asked to regard as sacred instead of the experimental method [...] They will be disappointed... [...] No method (experimental or otherwise) can alone guarantee the veracity of a proposition and thereby scientifically ensure the validity of a technicopolitical decision." (Le Moigne 1994, p. 232; my translation).

Furthermore, although everyone is well aware of the sometimes bitter opposition between the supporters of a laboratory-based methodology (i.e., the use of artificial settings) and the supporters of a methodology based on natural contexts, it is clear that all contemporary investigators interested in the mind–culture relationship conduct their research in "everyday" settings (a better term than "natural"). There is no reason to reject knowledge just because it has been acquired using laboratory methods, just as it must also be acknowledged that the researcher's presence in the field creates an artificial situation relative to the everyday life of the subjects under observation (Laplantine 1995). In a sense, then, there is artifice in all cases.

Returning to the experimental method, Poortinga (1993) used examples of cross-cultural studies to argue in favor of quasi-experimental paradigms that compare the performances of subject groups from different cultures (see also Hui & Triandis 1985; Leung 1989; Poortinga 1989; Poortinga & van de Vijver 1987; van de Vijver 2001). These paradigms avoid the dangers of an incorrect explanation. However, in a properly designed study, the conclusions are based not on an absolute explanation, but on the probability of one explanation rather than another. Pursuing the previous point, it is important to note that if a difference in performance is observed (that is, in the public manifestation of a cognitive skill), it may very well be an indication of a difference in the invoked skill (that is, in the beliefs of the observed subject). On the other hand, the lack of a difference in performances does not necessarily mean that there is no difference in skills (Reuchlin 1995).

Thus, the methods employed in cross-cultural research are the ones that are generally used in the social sciences. We now need to get beyond the current debate about the greater relevance of certain methods compared with others, which draws on various epistemological positions about the status of culture (Dasen 1993a). For example, can culture be regarded as an independent variable in quasi-experimental paradigms, or should it be regarded as a dynamic process that is incompatible with the role of variable (Greenfield 1997; Vijver & Leung 1997)? In a bid to make the two approaches converge, which Poortinga (1993) and Vijver (2001) would both like to see, the point of view proposed here involves considering that the knowledge constructed by a researcher through interaction with an observed subject is the product of a dynamic process of meaning generation structured by that researcher's goals. In certain cases, then, a cross-cultural situation of communication can be a social interaction that is organized and controlled by the researcher using a quasi-experimental paradigm. In this case, culture is a dynamic process implicated not only in the researcher–subject interaction but also in the scientific community, and it is an independent variable as well.

For the study of cognitive development, Wassmann (1995) and Wassmann and Dasen (1998, 2006) advocate an interdisciplinary methodology consisting of three steps, in no predetermined order:

1. *Interviews*. The procedure commonly used by ethnologists is to question a few special informants. These informants are people who, because of their status or role, possess the knowledge being sought and are most likely to be able to paint a coherent picture of the normative cultural system. However, it has become clear that their knowledge is not always shared by the entire population. Interviews must therefore be extended to many other people. Thus, the first method consists of studying ethnographic documents and analyzing the discourse of a variety of informants.

2. *Observations*. It also turns out that what interviewees say does not necessarily correspond to what they do. Observations of concrete, everyday situations therefore help determine the extent to which the verbal descriptions people give have their counterpart in daily life. The second method is participant observation, either direct or instrumental (photographs, videotapes, etc.).

3. *Experiments*. We know that in order to be able to observe a particular process in a large number of subjects, one has to wait a very long time before a suitable everyday situation arises. To speed things up, it is useful to provoke situations in which the envisaged process will be brought into play and can thus be observed. The third method is the use of quasi-experimental paradigms.

As can be seen, a combination of different methods drawn from anthropology and psychology can be turned into an integrated and constructive point of view, one that supports a methodology that is both quantitative and qualitative. Unless one wishes to continue defending a dualistic approach, there is no reason to distinguish methods of understanding rooted in constructivism from methods of explanation originating in positivism (Richelle 1997). It is therefore fruitless to set a comparative psychology that is positivist and quantitative against a cultural psychology that is constructivist and qualitative. Lastly, in addition to the fact that the methodology proposed by Wassmann (1995) and Wassmann and Dasen (1998, 2006) must not be confined to subjects of so-called non-Western cultures, their proposal fails to objectify the researcher's subjectivity. No matter which method is used, the researcher's choice of a situation to observe is necessarily determined by the goals set for the project in question, with due consideration, of course, for its logistical constraints.

Conclusion

As Krewer (1993) noted, the main goal of cultural psychology is to make use of the human ability to create intersubjective means for setting up a dialogue between people with different lifestyles and views of the world. To answer Bredendiek and Krewer's (2001) questions raised in the introduction, the intersubjective means I give myself to establish just such a cross-cultural dialogue and thus achieve my own research goals consist in combining different perspectives, especially their underlying epistemologies, in the best way possible.

From anthropology and cultural psychology, I retain the fundamental role of the researcher's subjectivity in his or her interaction with the observed subject. A naturalistic definition of consciousness, taken from the philosophy of mind, in conjunction with a naturalistic definition of culture, taken from cognitive anthropology, allows me to model the communicative situation between the researcher doing the observing and the subject being observed. On this basis, given that the mental representations of an observed subject cannot – at the present time – be accessed by direct observation but can only be inferred from the observation of external behaviors, my knowledge of them has to be compiled by constructing a "model." From this standpoint, scientific culture is indeed a meaning-construction process framed by a shared activity.

Taking a radical constructivist epistemology as its starting point, my model of cultural otherness comes in the form of plausible, falsifiable and revisable knowledge. It incorporates a plan for understanding others with the aid of instruments or schemes, which are derived from my scientific cultural baggage and which act as its mediators. It relies on three main types of schemes:

1. An ideological scheme that results from combining relativistic and universalistic norms, along with the dynamics of separation and meeting, as they are studied in anthropology and sociology;
2. A theoretical scheme pertaining to developmental psychology in cultural contexts, which stems from the ecocultural model, developmental niches and contemporary Neo-Piagetian theories;
3. A methodological scheme devised by integrating qualitative and quantitative methods originating in the traditions of the social sciences.

From comparative psychology, I thus also retain a quasi-experimental approach, wherein culture is conceived of as an independent variable. The resulting knowledge can then be communicated to others, e.g., to the current reader of this text.

Added to this complex set of schemes is my personal experience in the South Pacific and also in the West. So when I tell my Polynesian brother about my research findings and he says "That's it!" without really knowing how to put it into words, I may have attained an ideal of (cross- and inter)culturation. If so, the model I propose may be suitable, *hic et nunc*, to account for and understand the phenomenon being studied (Glasersfeld 1988). Lastly, it should be noted that the observer and the observed subject are constantly changing, even in the course of a single observation (Devereux 1980; Laplantine 1995). In a recursive manner, then, the knowledge I have constructed has gradually transformed the tools that produced it in the first place (my researcher's schemes). At the same time, it may also have modified my Polynesian brother's view of himself and his culture. In this way, faced with the highly ambitious enterprise of objectifying social and cultural reality (Martin 2000), and in order to avoid a naive or dogmatic stance, the best policy is to explicitly – that is publicly – supply oneself with the means of engaging in what Morin (1982) described as "conscious science." This is what I believe I have attempted to do here.

References

Adamopoulos, J. & Lonner, W. (2001) Culture and psychology at a crossroad: Historical perspective and theoretical analysis. In: Matsumoto, D. (ed.) The handbook of culture and psychology. Oxford University Press: Oxford, pp. 11–34.

Anselme, J.-L. (2001) Branchements. Une anthropologie de l'universalité des cultures. Flammarion: Paris.

Augé, M. (1994) Le sens des autres. Actualité de l'anthropologie. Fayard: Paris.

Baerveldt, C. & Verheggen, T. (1999) Enactivism and the experiential reality of culture: Rethinking the epistemological basis of cultural psychology. Culture & Psychology 5 (2): 183–206.

Barreau, H. (1990) L'épistémologie (4ème édition 1998). PUF: Paris.

Berry, J. (1984) Towards a universal psychology of cognitive competence. International Journal of Psychology 19: 335–361.

Berry, J. (1993) Indigenous cognition: A conceptual analysis and an empirical example. In: Wassmann, J. & Dasen, P. (eds.) Alltagswissen. Les savoirs quotidiens. Everyday cognition. Universitätsverlag Freiburg: Freiburg, pp. 139–156.

Berry, J. (1997) Preface. In: Berry, J., Poortinga, Y. & Pandey, J. (eds.) Handbook of cross-cultural psychology: Volume 1: Theory and method. Allyn & Bacon: Boston, pp. x–xv.

Berry, J. (1999) Emics and etics: A symbiotic conception. Culture & Psychology 5 (2): 165–171.

Berry, J., Poortinga, Y., Segall, M. & Dasen, P. (2002) Cross-cultural psychology: Research and applications (2nd edition). Cambridge University Press: Cambridge.

Bideaud, J. (1999) Psychologie du développement: les avatars du constructivisme. Psychologie Française 44: 205–220.

Bideaud, J. & Houdé, O. (1991) Cognition et développement. Boîte à outils théoriques. Peter Lang: Bern.

Bitterlin, L. (1996) L'antiracisme dans tous ses débats. Arléa-Corlet: Condé-sur-Noireau.

Bredendiek, M. & Krewer, B. (2001) Comprendre l'autre culturel. Bulletin de l'Association pour la Recherche InterCulturelle (ARIC) 36: 40–48.

Breton, R. (1981) Les ethnies (2ème édition 1992). PUF: Paris.

Bril, B. & Lehalle, H. (1988) Le développement psychologique est-il universel? Approches interculturelles. PUF: Paris.

Bril, B., Dasen, P., Sabatier, C. & Krewer, B. (eds.) (1999) Propos sur l'enfant et l'adolescent. Quels enfants pour quelles cultures? L'Harmattan: Paris.

Bronckart, J.-P., Clémence, A., Schneuwly, B. & Schurmans, M.-N. (1996) "Manifesto." Reshaping humanities and social sciences: A Vygotskian perspective. Swiss Journal of

Psychology 55: 74–83.
Bruner, J. (1991) …Car la culture donne forme à l'esprit. De la révolution cognitive à la psychologie culturelle. EsHel: Paris. English original: (1990) Acts of meaning, Harvard University Press: Cambridge MA.
Bruner, J. (2000a) Culture et modes de pensée. L'esprit humain dans ses oeuvres. Retz: Paris. English original: (1986) Actual minds, possible worlds. Harvard University Press: Cambridge MA.
Bruner, J. (2000b) Piaget et Vygotsky. Célébrons la divergence. In: Houdé, O. & Meljac, C. (eds.) L'esprit piagétien. Hommage international à Jean Piaget. PUF: Paris, pp. 237–253. English original: (1997) Celebrating divergence: Piaget and Vygotsky. Human Development 40: 63–73.
Cole, M. (1988) Cross-cultural research in the sociohistorical tradition. Human Development 31: 137–157.
Cole, M. (1995) Culture and cognitive development: From cross-cultural research to creating systems of cultural mediation. Culture & Psychology 1 (1): 25–54.
Cole, M. (1996) Cultural psychology: A once and future discipline (3rd edition 1998). The Belknap Press of Harvard University Press: Cambridge & London.
Cuche, D. (1996) La notion de culture dans les sciences sociales (nouvelle édition 2001). La Découverte: Paris.
Cuche, D. (2002) Nouveaux regards sur la culture: L'évolution d'une notion en anthropologie. In: Journet, N. (ed.) La culture: de l'universel au particulier. Sciences Humaines: Paris, pp. 203–212.
Dalai Lama (2000) Le pouvoir de l'esprit. Entretiens avec des scientifiques [Consciousness at the crossroads: Conversations with the Dalai Lama on brain science and buddhism, Snow Lion Publications, 1999]. Fayard: Paris.
Dasen, P. (1993a) Schlusswort. Les sciences cognitives: Do they shake hands in the middle? In: Wassmann, J. & Dasen, P. (eds.) Alltagswissen. Les savoirs quotidiens. Everyday cognition. Universitätsverlag Freiburg: Freiburg, pp. 331–349.
Dasen, P. (1993b) L'ethnocentrisme de la psychologie. In: Rey-von Allmen, M. (ed.) Psychologie clinique et interrogations culturelles. L'Harmattan: Paris, pp. 155–174.
Dasen, P. (2000) Approches interculturelles: acquis et controverses. In: Dasen, P. & Perregaux, C. (eds.) Pourquoi des approches interculturelles en sciences de l'éducation? De Boeck Université: Paris & Bruxelles, pp. 7–28.
Dasen, P. (2001) La méthode comparative: Un luxe anglophone? Bulletin de l'Association pour la Recherche InterCulturelle (ARIC) 36: 68–74.
Dasen, P. (2003) Theoretical frameworks in cross-cultural developmental psychology: An attempt at integration. In: Saraswathi, T. (ed.) Cross-cultural perspectives in human development. Theory, research and applications. Sage: New Delhi, pp. 128–165.
Dasen, P. & Ribeaupierre, A. de (1987) Neopiagetian theories: Cross-cultural and differential perspectives, International Journal of Psychology 22: 793–832.
Dennett, D. (1993) La conscience expliquée. Odile Jacob: Paris. English original: (1991) Consciousness explained. Little, Brown and Company: Boston, MA.
Devereux, G. (1980) De l'angoisse à la méthode dans les sciences du comportement. Flammarion: Paris. English original: (1967) From anxiety to method in the behavioral sciences. Mouton & EHESS: Paris.
Diamond, J. (2000) De l'inégalité parmi les sociétés. Essai sur l'homme et l'environnement dans l'histoire. Gallimard: Paris. English original: (1997) Guns, germs, and steel: The fates of human societies, W. W. Norton: New York.
Doise, W. (ed.) (1979) Expériences entre groupes. EHESS & Mouton: Paris.
Dupuy, J.-P. (2000) Les savants croient-ils en leurs théories? Une lecture philosophique de l'histoire des sciences cognitives. INRA: Paris.
Edelman, G. (2004) Plus vaste que le ciel. Une nouvelle théorie générale du cerveau. Odile Jacob: Paris. English original: (2004) Wider than the sky: The phenomenal gift of consciousness. Yale University Press: Yale.
Eccles, J. (1997) Comment la conscience contrôle le cerveau. Fayard: Paris. English original: (1994) How the self controls its brain. Springer-Verlag: Berlin.
Fisette, D. & Poirier, P. (2000) Philosophie de l'esprit. Etat des lieux. Vrin: Paris.
Gardiner, H. (2001) Culture, context, and development. In: Matsumoto, D. (ed.) The handbook of culture and psychology. Oxford University Press: Oxford, pp. 101–117.
Georgas, J.,Vijver, van de F. & Berry, J. (2004) The ecocultural framework, ecosocial indices, and psychological variables in cross-cultural research. Journal of Cross-Cultural Psychology 35: 74–96.
Glasersfeld, E. von (1988) Introduction à un constructivisme radical. In: Watzlawick, P. (ed.) L'invention de la réalité. Comment savons-nous ce que nous croyons savoir? Contributions au constructivisme. Seuil: Paris, pp. 19–43. English original: An introduction to radical constructivism. In: Watzlawick, P. (ed.) The invented reality: How do we know? W. W. Norton: New York, pp. 17–40.
Glasersfeld, E. von (1995) Radical constructivism: A way of knowing and learning. Falmer Press: London.
Glasersfeld, E. von (1997) Homage to Jean Piaget. Irish Journal of Psychology 18 (3): 293–306. Retrieved from http://srri.nsm.umass.edu/vonGlasersfeld/onlinePapers/html/216.html on 25 September 2007.
Glasersfeld, E. von (1999a) How do we mean? A constructivist sketch of semantics. Cybernetics and Human Knowing 6 (1): 9–16. Retrieved from http://srri.nsm.umass.edu/vonGlasersfeld/onlinePapers/html/238.html on 25 September 2007.
Glasersfeld, E. von (1999b) Le Moigne's defense of constructivism. In: GRASCE (ed.) Entre systémique et complexité, chemin faisant [Between systemics and complexity – making the way]. PUF: Paris, pp. 85–90. Retrieved from http://srri.nsm.umass.edu/vonGlasersfeld/onlinePapers/html/242.html on 25 September 2007.
Glasersfeld, E. von (2001) Constructivisme radical et enseignement [Radical constructivism and teaching]. Revue Canadienne de l'Enseignement des Sciences, des Mathématiques et des Technologies 1 (2): 211–222. English version retrieved from http://srri.nsm.umass.edu/vonGlasersfeld/onlinePapers/html/geneva/ on 25 September 2007.
Gosselin, G. & Ossebi, H. (eds.) (1994) Les sociétés pluriculturelles. L'Harmattan:

Paris.
Greenfield, P. (1997) Culture as process: Empirical methods for cultural psychology. In: Berry, J., Poortinga, Y. & Pandey, J. (eds.) Handbook of cross-cultural psychology: Volume 1: Theory and method. Allyn & Bacon: Boston, pp. 301–346.
Gruzinski, S. (1999) La pensée métisse. Fayard: Paris.
Gudykunst, W. & Bond, M. (1997) Intergroup relations across cultures. In: Berry, J., Segall, M. & Kagitçibasi, C. (eds.) Handbook of cross-cultural psychology. Volume 3. Social behavior and applications. Allyn & Bacon: Boston, pp. 119–161.
Hayward, J. & Varela, F. (eds.) (1995) Passerelles. Entretiens avec le Dalaï-lama sur les sciences de l'esprit. Albin Michel: Paris. English original: (1992) Gentle bridges: Conversations with the Dalai Lama on the sciences of mind. Shambhala Publications: Boston, MA.
Helfrich, H. (1999) Beyond the dilemma of cross-cultural psychology: Resolving the tension between etic and emic approaches. Culture & Psychology 5 (2): 131–153.
Hirschfeld, L. & Gelman, S. (eds.) (1994) Mapping the mind: Domain specificity in cognition and culture. Cambridge University Press: Cambridge.
Houdé, O. & Meljac, C. (eds.) (2000) L'esprit piagétien. Hommage international à Jean Piaget. PUF: Paris.
Houdé, O., Mazoyer, B. & Tzourio-Mazoyer, N. (eds.) (2002) Cerveau et psychologie. Introduction à l'imagerie cérébrale anatomique et fonctionnelle. PUF: Paris.
Hui, H. & Triandis, H. (1985) Measurement in cross-cultural psychology: A review and comparison of strategies, Journal of Cross-Cultural Psychology 16: 131–152.
Jahoda, G. (1986) A cross-cultural perspective on developmental psychology. International Journal of Behavioral Development 9: 417–437.
Jahoda, G. (1993) Themes in the history of culture and cognition. In: Wassmann, J. & Dasen, P. (eds.) Alltagswissen. Les savoirs quotidiens. Everyday cognition. Universitätsverlag Freiburg: Freiburg, pp. 19–41.
Jahoda, G. (2002) The shifting sands of "culture." In: Boski, P., Vijver, van de F. & Chodynicka, M. (eds.) New directions in cross-cultural psychology. Polish Psychological Association: Warsaw, pp. 91–106.
Jahoda, G. & Krewer, B. (1997) History of cross-cultural and cultural psychology. In: Berry, J., Poortinga, Y. & Pandey, J. (eds.) Handbook of cross-cultural psychology: Volume 1: Theory and method. Allyn & Bacon: Boston, pp. 1–42.
Jambet, C. (1983) La logique des Orientaux. Henry Corbin et la science des formes. Seuil: Paris.
Kilani, M. (1994) L'invention de l'autre. Essais sur le discours anthropologique (2ème édition 2000). Payot: Lausanne.
Kim, U. (2001) Culture, science, and indigenous psychologies: An integrated analysis. In: Matsumoto, D. (ed.) The handbook of culture and psychology. Oxford University Press: Oxford, pp. 51–75.
Kim, U. & Berry, J. (eds.) (1993) Indigenous psychologies: Research and experience in cultural context. Sage: Newbury Park.
Krewer, B. (1993) Psychologie transculturelle ou psychologie culturelle: l'homme entre une nature universelle et des cultures spécifiques. In: Tanon, F. & Vermès, G. (eds.) L'individu et ses cultures. L'Harmattan: Paris, pp. 79–90.
Krewer, B. (1999) La construction de l'autre culturel du point de vue de la psychologie. In: Hily, M.-A. & Lefebvre, M.-L. (eds.) Identité, collectivité et altérité. L'Harmattan: Paris.
Lakoff, G. & Johnson, M. (1999) Philosophy in the flesh: The embodied mind and its challenge to Western thought. Basic Books: New York.
Laplantine, F. (1995) L'anthropologie (2ème édition). Payot & Rivages: Paris.
Latouche, S. (1999) Présentation. Le retour de l'ethnocentrisme. Purification ethnique versus universalisme cannibale (7–19). Numéro spécial de la revue du MAUSS semestrielle (n• 13). La Découverte/MAUSS: Paris.
Lautrey, J. & Vergnaud, G. (eds.) (1997) Piaget aujourd'hui. Numéro spécial de la revue Psychologie Française (n• 42). PUG: Grenoble.
Le Moigne, J.-L. (1994) Le constructivisme. Tome 1. Des fondements. ESF: Paris.
Le Moigne, J.-L. (1995) Le constructivisme. Tome 2. Des épistémologies. ESF: Paris.
Lécuyer, R. (2001) Rien n'est jamais acquis. Ou de la permanence de l'objet… de polémiques. Enfance 1: 35–65.
Leung, K. (1989) Cross-cultural differences: Individual-level vs. culture-level analysis. International Journal of Psychology 24: 703–719.
Leyens, J.-P., Yzerbyt, V. & Schadron, G. (1996) Stéréotypes et cognition sociale [Stereotypes and social cognition, Sage, 1994]. Mardaga: Sprimont.
Liauzu, C. (1992) Race et civilisation. L'autre dans la culture occidentale. Anthologie critique. Syros/Alternatives: Paris.
Liben, L. (2007) Embodiment and children's understanding of the real and representational world. In: Overton, W., Mueller, U. & Newman, J. (eds.) Developmental perspectives on embodiment and consciousness. Erlbaum: Hillsdale, pp. 191–224.
Lonner, W. (1999) Helfrich's "principle of triarchic resonance": A commentary on yet another perspective on the ongoing and tenacious etic-emic debate. Culture & Psychology 5 (2): 173–181.
Lonner, W. & Adamopoulos, J. (1997) Culture as antecedent to behavior. In: Berry, J., Poortinga, Y. & Pandey, J. (eds.) Handbook of cross-cultural psychology: Volume 1: Theory and method. Allyn & Bacon: Boston, pp. 43–83.
Lucariello, J. (1995) Mind, culture, person: Elements in a cultural psychology. Human Development 38: 2–18.
Martin, H. (2000) Perspective sur la psychologie interculturelle comparative. In: Dasen, P. & Perregaux, C. (eds.) Pourquoi des approches interculturelles en sciences de l'éducation? De Boeck Université: Paris & Bruxelles, pp. 85–104.
Maturana, H. & Varela, F. (1994) L'arbre de la connaissance. Racines biologiques de la compréhension humaine. Addison-Wesley: Paris. English original: (1992) The tree of knowledge: A new look at the biological roots of human understanding, Revised edition. Shambhala/New Science Library: Boston.
McGee, K. (2005) Enactive cognitive science. Part 1: Background and research themes. Constructivist Foundations 1 (1): 19–34.
Mehler, J. & Dupoux, E. (1990) Naître humain. Odile Jacob: Paris.
Meljac, C., Voyazopoulos, R. & Hatwell, Y. (eds.) (1998) Piaget après Piaget: Évolution des modèles, richesse des pratiques. La Pensée Sauvage: Grenoble.
Miller, J. (1997) Theoretical issues in cultural psychology. In: Berry, J., Poortinga, Y. &

Pandey, J. (eds.) Handbook of cross-cultural psychology: Volume 1: Theory and method. Allyn & Bacon: Boston, pp. 85–128.
Morin, E. (1982) Science avec conscience (nouvelle édition 1990). Fayard & Seuil: Paris.
Morin, E. (1990) Introduction à la pensée complexe (6ème édition 1996). ESF: Paris.
Netchine-Grynberg, G. (ed.) (1999) Développement et fonctionnements cognitifs: Vers une intégration. PUF: Paris.
Piaget, J. (1937) La construction du réel chez l'enfant (6ème édition 1977). Delachaux & Niestlé: Neuchâtel. English translation: (1954) The construction of reality in the child. Ballantine: New York.
Piaget, J. (1970) L'épistémologie génétique (4ème édition 1988). PUF: Paris.
Piattelli-Palmarini, M. (ed.) (1979) Théories du langage. Théories de l'apprentissage. Le débat entre Jean Piaget et Noam Chomsky. Seuil: Paris. English translation: (1980) Language and learning: The debate between Jean Piaget and Noam Chomsky. Harvard University Press: Cambridge.
Poortinga, Y. (1989) Equivalence of cross-cultural data: An overview of basic issues. International Journal of Psychology 24: 737–756.
Poortinga, Y. (1993) La psychologie interculturelle et la démythification de la "culture." In: Tanon, F. & Vermès, G. (eds.) L'individu et ses cultures. L'Harmattan: Paris, pp. 98–111.
Poortinga, Y. (1997) Towards convergence? In: Berry, J., Poortinga, Y. & Pandey, J. (eds.) Handbook of cross-cultural psychology: Volume 1: Theory and method. Allyn & Bacon: Boston, pp. 347–387.
Poortinga, Y. & Vijver, F. van de (1987) Explaining cross-cultural differences: Bias analysis and beyong. Journal of Cross-Cultural Psychology 18: 259–282.
Popper, K. (1998) Des sources de la connaissance et de l'ignorance (Translated by M.-I. & M. B. de Launay). Payot & Rivages: Paris. English original: (1960) On the sources of knowledge and of ignorance. Proceedings of the British Academy 46: 39–71.
Ratner, C. (1997) Cultural psychology and qualitative methodology: Theoretical and empirical considerations. Plenum Press: New York & London.
Ratner, C. (2000) Outline of a coherent, comprehensive concept of culture. Cross-Cultural Psychology Bulletin 34 (1–2): 5–11.
Reuchlin, M. (1995) Totalités, éléments, structures en psychologie générale et en psychologie différentielle. In: Lautrey, J. (ed.) Universel et différentiel en psychologie. PUF: Paris, pp. 17–33.
Ribeaupierre, A. de (1997) Les modèles néo-piagétiens: Quoi de nouveau? Psychologie Française 42: 9–21.
Ricard, M. & Thuan, T. X. (2000) L'infini dans la paume de la main. Du Big Bang à l'éveil. NiL Editions & Fayard: Paris.
Richelle, M. (1997) Dualism and monism in psychology: Epistemological and methodological implications. Invited symposium. 8th European Conference on Developmental Psychology. Rennes (France).
Rosenfield, I. (1994) L'invention de la mémoire. Le cerveau, nouvelles donnes. Flammarion: Paris. English original: (1988) The invention of memory: A new view of the brain, Basic Books: New York.
Sabatier, C. & Dasen, P. (eds.) (2001) Cultures, développement et éducation. Autres enfants, autres écoles. L'Harmattan: Paris.
Saraswathi, T. (1998) Many deities, one god: Towards convergence in cultural and cross-cultural psychology. Culture & Psychology 4 (2): 147–160.
Searle, J. (1995) La redécouverte de l'esprit. Gallimard: Paris. English original: (1992) The rediscovery of mind. MIT Press: Cambridge, MA.
Searle, J. (2004) Mind. A brief introduction. Oxford University Press: New York & Oxford.
Segall, M. (1993) La psychologie culturelle, un nouveau territoire? In: Tanon, F. & Vermès, G. (eds.) L'individu et ses cultures. L'Harmattan: Paris, pp. 91–97.
Segall, M. (1999) Why is there still racism if there is no such thing as "race"? In: Lonner, W., Dinnel, D., Forgays, D. & Hayes, S. (eds.) Merging past, present, and future in cross-cultural psychology. Swets & Zeitlinger: Lisse, pp. 14–26.
Segall, M., Dasen, P., Berry, J. & Poortinga, Y. (1999) Human behavior in global perspective: An introduction to cross-cultural psychology (2nd edition). Allyn & Bacon: Boston.
Shweder, R. (1990) Cultural psychology – what is it? In: Stigler, J., Shweder, R. & Herdt, G. (eds.) Cultural psychology: Essays on comparative human development. Cambridge University Press: Cambridge, pp. 1–43.
Shweder, R. (2003) Why do men barbecue? Recipes for cultural psychology. Harvard University Press: Cambridge.
Sinha, D. (1997) Indigenizing psychology. In: Berry, J., Poortinga, Y. & Pandey, J. (eds.) Handbook of cross-cultural psychology: Volume 1: Theory and method. Allyn & Bacon: Boston, pp. 129–169.
Sperber, D. (1994) The modularity of thought and the epidemiology of representations. In: Hirschfeld, L. & Gelman, S. (eds.) Mapping the mind: Domain specificity in cognition and culture. Cambridge University Press: Cambridge, pp. 39–67.
Sperber, D. (1996) La contagion des idées. Théorie naturaliste de la culture. Odile Jacob: Paris. English original: (1996) Explaining culture. Blackwell: Oxford.
Sperber, D. (1999) Conceptual tools for a natural science of society and culture. Radcliffe-Brown lecture in social anthropology. Retrieved from http://www.dan.sperber.com/Rad-Brow.htm on 25 September 2007.
Sperber, D. & Hirschfeld, L. (1999) Culture, cognition, and evolution. In: Wilson, R. & Keil, F. (eds.) The MIT encyclopedia of the cognitive sciences. MIT Press: Cambridge, pp. cxi–cxxxii.
Sperber, D. & Hirschfeld, L. (2004) The cognitive foundations of cultural stability and diversity. Trends in Cognitive Sciences 8 (1): 40–46.
Sperber, D. & Wilson, D. (1989) La pertinence. Communication et cognition. Editions de Minuit: Paris. English original: (1986) Relevance: Communication and cognition. Blackwell: Oxford.
Super, C. & Harkness, S. (1986) The developmental niche: A conceptualization at the interface of child and culture. International Journal of Behavioral Development 9: 545–569.
Super, C. & Harkness, S. (1997) The cultural structuring of child development. In: Berry, J., Dasen, P. & Saraswathi, T. (eds.) Handbook of cross-cultural psychology: Volume 2: Basic processes and human development. Allyn & Bacon: Boston, pp. 1–39.
Taguieff, P.-A. (1987) La force du préjugé.

Essai sur le racisme et ses doubles. Gallimard: Paris.
Taguieff, P.-A. (1997) Le racisme. Flammarion: Paris.
Thompson, E. & Varela, F. (2001) Radical embodiment: Neural dynamics and consciousness. Trends in Cognitive Science 5 (10): 418–425.
Troadec, B. (2001a) Le modèle écoculturel: Un cadre pour la psychologie culturelle comparative. International Journal of Psychology 36: 53–64.
Troadec, B. (2001b) Variabilité interculturelle du pluralisme interindividuel: L'exemple du développement de la catégorisation. Archives de Psychologie 69: 215–236.
Troadec, B. (2003a) Point de vue sur l'interculturel: Les schèmes d'un psychologue du développement cognitif. Bulletin de Psychologie 56 (1): 3–21.
Troadec, B. (2003b) Le développement de la représentation de l'espace à Tahiti: Variabilité du côté mer et du côté montagne. Journal de la Société des Océanistes 116: 25–37.
Troadec, B. (2007) Psychologie culturelle. Le développement cognitif est-il culturel? Belin: Paris.
Troadec, B. & Martinot, C. (2003) Le développement cognitif. Théories actuelles de la pensée en contextes. Belin: Paris.
Troadec, B., Martinot, C. & Cottereau-Reiss, P. (2002) The cross-cultural study of diversity in cognitive development: Categorization and space. In: Boski, P., Vijver, F. van de & Chodynicka, M. (eds.) New directions in cross-cultural psychology. Polish Psychological Association: Warsaw, pp. 243–258.
Varela, F. (1989a) Connaître. Les sciences cognitives. Tendances et perspectives. Seuil: Paris. Originally published in 1988.
Varela, F. (1989b) Autonomie et connaissance. Essai sur le vivant. Seuil: Paris. English original: (1979) Principles of biological autonomy. Elsevier North Holland: New York.
Varela, F., Thompson, E. & Rosch, E. (1993) L'inscription corporelle de l'esprit. Sciences cognitives et expérience humaine. Seuil: Paris. English original: (1991) The embodied mind: Cognitive science and human development, MIT Press: Cambridge, MA.
Vijver, F. van de (2001) The evolution of cross-cultural research method. In: Matsumoto, D. (ed.) The handbook of culture and psychology. Oxford University Press: Oxford, pp. 77–100.
Vijver, F. van de & Leung, K. (1997) Methods and data analysis of comparative research. In: Berry, J., Poortinga, Y. & Pandey, J. (eds.) Handbook of cross-cultural psychology: Volume 1: Theory and method. Allyn & Bacon: Boston, pp. 257–300.
Wassmann, J. (1995) The final requiem for the omniscient informant? An interdisciplinary approach to everyday cognition. Culture & Psychology 1 (2): 167–201.
Wassmann, J. & Dasen, P. (1998) Balinese spatial orientation: Some empirical evidence for moderate linguistic relativity. The Journal of the Royal Anthropological Institute 4: 689–711.
Wassmann, J. & Dasen, P. (2006) How to orient yourself in Balinese space: Combining ethnographic and psychological methods for the study of cognitive processes. In: Straub, J., Seidemann, D., Kölbl, C. & Zielke, B. (eds.) Pursuit of meaning. Advances in cultural and cross-cultural psychology. Transcript: Bielefeld, pp. 351–376.
Wieviorka, M. (ed.) (1993) Racisme et modernité. La Découverte: Paris.
Wieviorka, M. (2001) La différence. Balland: Paris.
Yamaguchi, S. (2002) Cultural psychology and indigenous psychology: Are they foes or allies? Cross-Cultural Psychology Bulletin 36 (2–3): 5–13.
Ysos, L. & Troadec, B. (2005) Etude interculturelle du développement de la représentation spatialisée du temps. Psychologie & Education 3: 27–42.
Zarhbouch, B. & Troadec, B. (2006) The effect of the direction of the reading and writing of the language on the spacialized representation of the notion of time. Journal of Arab Children 27: 19–34.

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