

CHAPTER 27

Paradigms of Cultural Thought

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Two Paradigms of Thought: Phenomena, Theory, and Methodology

In 1963, Jerome Bruner gave me the chance of a lifetime – to go to Senegal to do my dissertation on relations between culture and the development of thought. While there I made an unexpected discovery, one that led me into two radically different paradigms of cultural thought. I found that unschooled Wolof children, participating in a classic Piagetian conservation task, were unable to reply to the question, “Why do you *think* (or *say*) this glass has more (or equal) water?”; yet they quickly answered an alternative form of the question: “Why *does* this glass have more (or equal) water?” (Greenfield, 1966). U.S. or Swiss children, of course, had no difficulty in understanding the first question. Neither did Wolof schoolchildren. What did this difference mean? At first this seemed to be a methodological problem. Later I realized it was a reflection of deep differences in cultural psychology: In providing a reason for their thoughts or words,

Western and Wolof school children were displaying psychological mindedness; they distinguished between their own thought or statement about something and the thing itself. In contrast, the unschooled Wolof children were not making this distinction. They were assuming the world on one plane with thought and object of thought as one unified reality.

I am going to use this difference to provide some historical background for the theoretical theme of this chapter – that there are two major paradigms of cultural thought, an individualistic one and a collectivistic one, and that each is part of a larger pathway of development that encompasses the social as well as the cognitive (Greenfield et al., 2003). Although this theme leads to a very selective review of research on culture and thinking, it also provides theoretical coherence for a diverse body of literature.

I took the terminology of individualism and collectivism from anthropologists Florence Kluckhohn and Fred Strodtbeck’s pathbreaking 1961 book, *Variations in Value Orientation*. For me, collectivism was a world

view in which people were more connected both to each other and to the physical world than in the individualistic worldview. The terminology was not perfect and continues to be problematic (e.g., Oyserman, Coon, & Kemmelmeier, 2002). The important point for me, however, was that a worldview and a value system had significant cognitive implications.

The intrinsic connectedness of the physical and social worlds for our unschooled Wolof participants was substantiated by the distinctive causal reasoning of unschooled children who had not yet attained conservation. Children who believed the quantity of water had changed after the experimenter transferred it to a taller, thinner beaker (or divided it into several smaller beakers) would often say that the amount had changed because "you poured it." This justification contrasted with the more usual perceptual reasons I had seen in the United States – for example, the amount has changed because "the water is higher." At first, I thought that "a natural phenomenon was being explained by attributing special, magical powers to intervening human agents" (Greenfield & Bruner, 1966/69). But then we realized this was an ethnocentric interpretation. We drew upon Kohler (1937/1962), who points out that such phenomena are made possible by a worldview,

in which animate and inanimate phenomena occupy a single plane of reality. That is, the child in the conservation experiment is faced with the following sequence of events: (1) water a certain way, (2) experimenter's action, (3) water changed. When the child says the amount is not the same because the experimenter poured it, he is basing his causal inference on contiguity – the usual procedure even in our society. But under ordinary circumstances, we would accept an explanation in terms of contiguous physical events or contiguous social events, but not a causal chain that included both kinds of event. Thus "magic" only exists from the perspective of a dualistic ontology. (Greenfield & Bruner, 1969, p. 639).

The presence of a school in the bush village where I worked, Taiba N'Diaye, made

possible a natural experiment. Some children went to school; others, even from the same families, did not. There was no selection for school attendance on the basis of intelligence. We therefore could see what difference school made. Indeed, it suppressed the action reasons for inequality judgments with what we called at the time "astounding absoluteness"; there was not one instance among all the school children, either in the village or in the capital city of Dakar (Greenfield & Bruner, 1966/1969). This was my second hint that school functions to create an individualistic psychology. One route to this effect might be that, in school, one is always being asked to give reasons for things. At the time, however, my best candidate was literacy, introduced into the oral Wolof culture by the school, of French colonial origin. In the written word, a thought clearly has a separate physical manifestation from its referents in the real world; this could be the beginning of understanding self as separate from world and thought as separate from its referent (Greenfield, 1972/1975). But the finding also shows that worldviews are not immutable; they are constructed by experience.

Finally, a learning experiment helped us analyze further the thought processes of the unschooled children. We devised a procedure in which the child, rather than the experimenter, first transferred the water from one beaker to a taller, thinner one, then to six tiny ones. We thought that the child might be willing to attribute powers to an authority figure that he was not willing to attribute to himself. Indeed, at all ages (from six to thirteen), conservation performance was much better when the child poured than when the experimenter poured, and there was good transfer of the conservation judgment to posttests in which the experimenter did the pouring (Greenfield, 1966). We concluded that the experimenter as authority figure was considered to have causal power to change the amount of water. Once the child had a chance to "do-it-himself or herself," the powers of the experimenter were somehow diminished. Only recently have I come to realize that the action reason

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for inequality, reflecting the importance of social authority, is also part of the collectivistic worldview.

We connected these patterns of thought to early Wolof socialization on the one hand and to African philosophy on the other. First we reasoned as follows:

It may be that a collective, rather than individual, value orientation develops where the individual lacks power over the physical world. Lacking personal power, he has no notion of personal importance. In terms of his cognitive categories, now, he will be less likely to set himself apart from others and the physical world, he will be less self-conscious at the same time that he places less value on himself. Thus, mastery over the physical world and individualistic self-consciousness will appear together in a culture, in contrast to a collective orientation and a . . . world view in which people's attitudes and actions are not placed in separate conceptual pigeonholes from physical events. (Greenfield & Bruner, 1969, p. 640).

Indeed, I had noted that the unschooled Wolof children had never spontaneously manipulated the materials in the conservation experiment. I saw this as indicative of the absence of a sense of power over the physical world.

The Importance of Ethnography

Was there a developmental reason in early socialization for this dichotomy between individual mastery over the physical world and a collectivistic value orientation? I turned to the anthropological method of ethnography to find out. Ethnography is often defined in anthropology as participant observation; in the course of developing an appropriate participant role or roles in a real-life cultural setting, the researcher is able to record, traditionally by means of in-depth field notes, everyday life and discourse relevant to a particular topic or multiple topics.

My colleague and friend in Senegal, Jacqueline Rabain, working on an ethnographic dissertation for the Sorbonne, found some clues to early socialization in the every-

day life of children and their caregivers. She found clues, for example, in adult interpretations of the child's developing motor capacities. Whereas we, in the United States or France, would get excited about the child's first step as an index of developing skill and even independence, a Wolof mother would likely interpret it as signifying the child's desire in relation to a person in his surrounding; for example, she might say something like "Look, he's walking toward you!" (Rabain-Zempléni, 1965).

Thus, adult interpretation of the child's first actions would seem to be paradigmatic for the choice between an individualistic and a collective orientation; a social interpretation of an act not only relates the actor to the group but also relates the group, including the actor, to physical events. When on the other hand, acts are given an interpretation in terms of motoric competence, other people are irrelevant and, moreover, the act is separated from the motivations, intentions, and desires of the actor himself. (Greenfield & Bruner, 1969, p. 641)

Such selective interpretations serve an important socializing function: They expose the child to what is considered important in a particular culture.

Rabain also found the first clues that collectivism was associated with de-emphasis of the world of objects. She noted that manipulation of objects was an occasional and secondary activity for the Wolof child from two to four years and that self-image rested more on power over people than power over objects. She noted further that verbal exchanges between adults and children often concerned valued relations between people but rarely concerned explanations of the physical world (Rabain-Zempléni, 1965). Because scientific thinking is so linked to the world of objects, this was a clue that collectivistic world view might privilege social thinking, thinking about people and their relations, over scientific thinking. Later research has confirmed this paradigm of early socialization for a world that emphasizes thinking about people rather than things (Greenfield et al., 2003). It contrasts greatly with a paradigm that emphasizes learning to

manipulate and understand objects, in the form of toys, from early infancy on (Greenfield et al., 2003).

Most intriguing, because it related directly to my conservation experiment, was Rabain's observation that, in the everyday situation of sharing a quantity among several persons (a situation not too different from the second half of my conservation experiment, in which a quantity of water was divided among six breakers), Wolof bush children pay more attention to who receives what, when, than to the amount received (Rabain-Zempléni, 1965). It parallels the "magical" action reason for nonconservation: More attention is focused on the person pouring, the social aspect of the situation, than on the purely physical aspect, the amount of water. This observation could also explain why Wolof children in Senegal achieved conservation in the standard experiment later than children in the United States or Switzerland.

This work illustrates the way in which ethnography can complement experiments to deepen understanding of paradigms of cultural thought. Ethnography has a very special role to play because it introduces cultural interpretations of behavior – it reveals that the very same behavior can have an opposite meaning in two different cultural settings. In a sense, when we do experiments in the United States, we already have done our ethnography. Because we are members of the society, we have a good idea of the cultural meaning of our results. This is not the case when we study a culture different from our own. Ethnography also connects our findings in the laboratory to the real world phenomena of everyday life. Finally, because cultural values are implicit in the very design of our experiments, often without our realizing it, ethnography is required to design valid cross-cultural experiments. We omit this first ethnographic stage of cross-cultural research at our own peril, as the reader will see later in this chapter.

The Level of Social Ideology

Rabain's ethnography did not uncover only socialization antecedents to the thinking

patterns found in my experiments. Equally fascinating were parallels on the broader cultural level of social ideology. Aimée Césaire had developed a concept of *négritude* or blackness, a worldview that distinguished Black values from White. In opposition to the individualism of European cultures, *négritude* emphasizes "solidarity, born of the cohesion of the . . . clan" (Kestelhof, 1962). The poet and president of Senegal, Leopold Senghor, defined *négritude* as "participation of the subject in the object, participation of the man in cosmic forces, communion of man with all other men" (Monteil, 1964, p. 31, my translation). This formulation of social and cultural ideology looked like my experimental results in Senegal writ large!

It was therefore not surprising that cultural world view also permeated the second cognitive domain of my dissertation research in Senegal, the development of categorization. If unschooled Wolof children were assuming that the world exists on one plane, with thought and object of thought as one unified reality, then it followed that the notions of individual viewpoints and different points of view would also be meaningless. Data from a study of picture categorization were relevant to this implication (Greenfield, Reich, & Olver, 1966/1972). Children of different ages were given triads of pictures and asked to pick the pair that was most alike. After unschooled Wolof children had selected a pair, the pictures were replaced and the participants were asked to find two different pictures from the same set that were also alike. In fact, each set of three images had been designed to have three bases of similarity – form, function, and color. But unschooled Wolof children did not find a second basis of similarity; they saw the stimuli from only one point of view. Researchers working in other parts of the nonindustrial world found parallel results (Cole et al., 1971; Irwin & McLaughlin, 1970). Thus, categorization behavior also revealed indications of taking for granted a single perspective on the world. (See Goldstone & Son, Chap. 2, for a review of theories of similarity; and Medin & Rips, Chap. 3, for a review of studies of categorization.)

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In their landmark 1974 book, *Culture and Thought*, Cole and Scribner noted the need for integrative theory "to pull together a variety of disconnected experiments" (Cole & Scribner, 1974, p. 172). I did not realize that the two paradigms of thought I had stumbled upon in Senegal formed the basis of such an integrative theory. Data on culture and thought that could later be inserted into this larger framework continued to accumulate. Like my problem in developing questions that were meaningful to elicit reasoning in a conservation experiment, many of the findings were initially seen as methodological barriers to be overcome rather than as deep cultural differences in cognitive functioning.

Let me give an example from Cole et al. (1971). These researchers took a categorization task to Liberia, where they presented it to their Kpelle participants. This task involved a set of 20 objects that divided evenly into the linguistic categories of foods, implements, food containers, and clothing. When asked to group objects that were similar, the Kpelle participants did not do the taxonomic sorts expected by the researchers. Instead participants consistently made functional pairings (Glick, 1968). For example, rather than sorting objects into groups of tools and foods, participants would put a potato and a knife together because "you take the knife and cut the potato" (Cole et al., 1971, p. 79). According to Glick, participants often justified their pairings by stating "that a wise man could only do such and such" (Glick, 1968, p. 13). In total exasperation, the researchers "finally said, 'How would a fool do it?' The result was a set of nice linguistically ordered categories – four of them with five items each" (Glick, 1968, p. 13).

From the methodological perspective of a cognitive psychologist, the researchers had failed to tap into the participants' obvious competence in categorization with their first procedure. This example illustrates what Cole and Scribner (1974) viewed as two general problems in the cross-cultural study of thought:

1. *There is a great readiness to assume that particular kinds of tests or experimental sit-*

uations are diagnostic of particular kinds of cognitive capacities or processes.

2. *Psychological processes are treated as "entities" which a person "has" or "does not have." In other words, they are considered a property of the person rather than the situation.*

(Cole & Scribner, 1974, p. 173).

There is another problem in this story that also can be considered methodological – the ethnocentrism of the criteria for "correct" sorting. Such methodological problems led Cole and Scribner (1974) to recommend that researchers take into account "knowledge about the culture and behavior of the people gained from the work of anthropologists, linguists, and other social scientists." (Ref. 8, p. 196). They went a step "further in suggesting that the *methods* of these relevant fields need to be integrated. . . . Field and laboratory, anthropological observation and psychological experimentation, can yield knowledge from different perspectives about the same function" (Ref. 8, p. 196). We already have seen this advice in action; collection of both qualitative and quantitative data is part of the methodological *armoire* of the cultural psychologist (Greenfield, 1997a).

But the problems of "wise" and "foolish" sorting also get to the substantive heart of the collectivistic paradigm of cognition. From the vantage point of a collectivistic worldview, I would submit that the "wise man's" pairings were of social utility, whereas the "foolish man's" taxonomic groupings of five items each were socially or pragmatically useless. I believe that is why, for the Kpelle, a wise man would make functional pairs, whereas only a fool would make taxonomic sorts.

This analysis leads us to an even deeper level of cultural definitions of intelligence: In the Kpelle example, the researchers' criterion for *intelligent* behavior was the participants' criterion for *foolish*; the participants' criterion for *wise* behavior was the researchers' criterion for *stupid* (Greenfield, 1997b). Underlying these interpretations of the experiment are different ethnotheories, that is, folk theories of intelligence. Most

profoundly, our theories of what kind of thought is worth studying are very much influenced by our ethnotheories of what constitutes intelligent behavior. And what constitutes intelligent behavior depends on what is adaptive and valued in a particular ecocultural environment. The investigation of ethnotheories of intelligence proved to greatly deepen understanding of cultural paradigms of thought (see Sternberg, Chap. 31, for further discussion of intelligence).

Theories and Ethnotheories of Intelligence

Clearly, human intelligence and the brain structure that supports it are keys to our adaptation as a species. Yet within this broad rubric of human intelligence, different forms of intelligence are valued and adaptive in different ecocultural niches. Mundy-Castle (1974/1976) contrasted technological intelligence, which is more developed in the independent, individualist characteristic of Europe, and social intelligence, which is more developed in the interdependent, collectivist characteristic of Africa. Closely related to technological intelligence (and perhaps indistinguishable from it) is scientific intelligence. Indeed, underlying Piaget's theory of cognitive development is a theory of intelligence as scientific thinking (Greenfield, 1974). By his own admission, understanding the basis for Western scientific thought was Piaget's most fundamental theoretical concern (Piaget, 1963/1977). Under Inhelder's leadership, Piaget investigated the development of scientific thought (chemistry and physics) in a set of experimental studies (Inhelder & Piaget, 1958). This body of theory and research implies the importance of scientific intelligence as a developmental goal for processes of thinking. Scientific or technological intelligence as a folk theory supports thinking skills that relate to the world of things rather than people; this would include most of the items and subtests of standardized intelligence tests.

Following Mundy-Castle's depiction of technological and social intelligence, related

explorations of intelligence concepts in different cultures began to appear (Dasen & de Ribeaupierre, 1987; Serpell, 1994; Sternberg et al., 1981; Wober, 1974); all challenged the assumption that technological or scientific intelligence was a universal endpoint of development (Greenfield, 1974). Indeed, social intelligence turned out to be the predominant ideal in Africa and Asia (e.g., Wober, 1974; Super, 1983; Dasen, 1984; Gill & Keats, 1980; Serpell, 1994; Nsamenang & Lamb, 1994; Grigorenko et al., 2001). Intelligence in all these investigations includes a concern with responsible ways of contributing to the social world. The central feature of the Baoulé concept of intelligence in Ivory Coast, West Africa, for example, is willingness to help others (Dasen 1984). In general, African cultures not only emphasize social intelligence but also see the role of technical skills as a means to social ends (Dasen 1984). This sort of ethnotheory of intelligence could explain why the taxonomic sorter was a foolish man in Kpelle eyes.

As a group, such conceptions can be seen as collectivistic conceptions of intelligence (Segall et al., 1999). Note that these conceptions are not all-or-none. Differences to a great extent, are a matter of differential priorities. At the same time, there is not one collectivistic conception of intelligence, nor a single individualistic conception of intelligence. There are cross-cultural surface variations for each underlying theme (Greenfield, 2000).

Who and What Are the Individualists and Collectivists?

This is perhaps the place to stop and define who are the individualists and who are the collectivists. In doing so, I will not present a simple picture. Instead, I will discuss ideal cases, in-between cases, culture change, biculturalism, and culture contact. These complexities take me beyond simple binary distinctions that have bothered some (Rogoff, 2003).

My nonbinary starting point is that all human beings are both individual and social.

What varies is try to maximize the human experience. The social and the individual are part of the same paradigm. So, it tends to be more of a relativistic system. The individual is not a system. The social is not a system. The individual is the face of the cultural paradigm of the other. For the United States, it often emphasizes primarily individualism. Universal existence in priming studies (individualism) is not the same as being elicited by Gabriel, & Lee.

It is also important to talk about attributes (cf. the notion of autonomy). Men and women have been used very conceptually. The notion that individual differences are culture-level differences. In response to one essence of oblations of obedience, clearly men more than for the notion of equality. More autonomy in an individual existence of the character to the present. The notion that count on individualism as interrelated. Founded upon the unit of the perspective. The notion of attributes, the social behavior,

What varies is the extent to which cultures try to maximize one or the other facet of the human experience. Correlated with this maximization are different forms that the social and the individual take within each paradigm. So, for example, social behavior tends to be more automatic in the collectivistic system and more by choice, providing individual autonomy, in the individualistic system. The other side of the maximization coin is the fact that the major mode of one cultural paradigm may be the minor mode of the other. For example, in the society of the United States, we might see religions as often emphasizing the communitarian in a primarily individualistic surround. The universal existence of both modes can be seen in priming studies in which the minor mode (individualism in the case of Asians, collectivism in the case of North Americans) can be elicited by a relevant prime (Gardner, Gabriel, & Lee, 1999).

It is also important to realize that we are talking about cultural *systems*, not isolated attributes (cf. Kitayama, 2002). The distribution of autonomy and obedience between men and women in a collectivistic culture has been used as an argument against the very concept of collectivistic culture and for the notion that autonomy and obedience are individual difference variables rather than culture-level characteristics (Turiel, 2000). In response to this argument, I note that one essence of a collectivistic culture is *relations* of obedience between women and men, clearly providing more autonomy for men than for women. Similarly, the *relation* of equality among individuals provides more autonomy for both women and men in an individualistic culture. It is not the *existence* of autonomy that is important in the characterization of a culture according to the present paradigm; it is the *patterning* that counts. Indeed, I would see the emphasis on individuals as separate rather than as interrelated (the hallmark of psychology founded upon the independent individual as the unit of analysis) as an individualistic perspective on social science itself. Culture as a system of relations, the patterning of attributes, the forms of individual and social behavior, and the system of priorities –

these are the bottom line of this theoretical paradigm.

Who are the collectivists? Harry Triandis notes that they include 70% of the world's population – the populations of Africa, Asia, Latin America, and Native America (Triandis, 1989). Equally important, there are demographic, ecological, and historical factors that are inputs into the expressed value system. Some of the most important demographic factors are economic level [rich are more individualistic than poor (Segall et al., 1999)], the urban–rural contrast [large-scale urban more individualistic than small-scale rural (Kim & Choi, 1994)], formal education [which functions as an individualizer (Reykowski, 1994)], high technology [which functions as an individualizer (Mundy-Castle, 1974)], immigration and migration (making people more individualistic), agricultural subsistence versus commerce [the latter functioning as an individualizer (Greenfield, Maynard, & Childs, 2003; Greenfield, 2004)], and religion (some are more individualistic; e.g., Protestantism, others more collectivistic; e.g., Catholicism).

Indeed, it is useful to see the two paradigms as originating as adaptations to different ecologies. Demographic factors influence ecology and, through ecology, they form psychologies. Thus, rich people do not need to cooperate with a larger group for their survival; poor people do. The urban environment contains many strangers, and so community relations become less functional (Kim, 1994). In formal education, the irreducible unit of performance is the individual who must receive an individual grade and performance evaluation (Greenfield, 1994). Complex technology functions as an individualizer in multiple ways – through providing large dwellings and office buildings with the opportunity for private space and through substituting interaction with a machine for interaction with people (e.g., television replacing frequent face-to-face visits).

When you immigrate to a new country or migrate to a new location within a country, you often leave extended family behind. As a consequence, a high rate of geographical mobility should increase individualism. This might be a reason why Europeans are less

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individualistic than Americans. Note, too, that nation states composed primarily of immigrants at their founding – for example, the United States, Canada, and Australia – are generally among the most individualistic (Hofstede, 1980; Oyserman, Coon, & Kemmelmeier, 2002).

In subsistence agriculture settings, all must cooperate to produce mainly perishable goods. In a commercial setting, it is desirable to maximize the monetary resources of an individual to accumulate nonperishable consumer goods like cars or televisions (Collier, 2003). Catholicism emphasizes the communal, including a pathway to God through another human being, the priest; Protestantism emphasizes the independent individual with a direct pathway to God. It is interesting that, as commerce develops in Mexico and Central America and when immigrants come to the commercial environment of the United States from the more agricultural environment of Mexico, evangelical Protestantism has become much more popular whereas Catholicism has declined in popularity.

It is also important to note that, because of all these factors, individualism and collectivism are relative terms, their systematic nature notwithstanding. If one tests rural versus urban populations in the same country (e.g., Mexico), one will usually find the rural population to be more collectivistic (e.g., Madsen & Shapira, 1970). On the other hand, if you compare Latino immigrant families in Los Angeles, an urban setting, and Euro-American families in Los Angeles, the urban Latino families will respond more collectivistically than the Euro-Americans (Raeff, Greenfield, & Quiroz, 2000). In other words, the nature of these demographic variables is such as to make individualism and collectivism graded, rather than all-or-none systems. Because they are so central to adaptation, they are clearly very sensitive to environmental factors.

Multiple demographic factors create paradigmatic cases on the extremes (H. Keller, personal communication, June, 2003): The small, stable, poor, agrarian village with an oral culture and without

advanced technology would be the paradigmatic case on the collectivistic end of the spectrum. The large, mobile, rich, urban neighborhood with a high level of formal schooling and advanced technology would be the paradigmatic case on the individualistic end of the spectrum. Clearly, all other cases would fall between these extremes.

A particular type of in-between case is the immigrant family who has come, most generally, from a poorer, more collectivistic society into a richer, more individualistic one. In general, such immigrants will be at a point between their compatriots in the ancestral country and natives of the host country on cognitive tasks that tap into individualistic and collectivistic paradigms of thought (Nisbett, 2003). In addition, we expect, as generations in the host country increase, the host country culture will make an increasingly large mark on patterns of thought.

Because of the development of the world in the direction of a dense urban, commercial, high-tech environment, there is a worldwide movement toward increasing individualism. Finally, because of high rates of immigration, there is also increasing contact between more individualistic and more collectivistic cultures in the world. This often leads to mismatches and misunderstandings. I will give an example of a cognitive mismatch and misunderstanding later in the chapter. But let me now turn to some additional thought processes in which the two paradigms manifest themselves, yielding interesting cross-cultural differences.

Thinking about People: Theory of Mind

Given what I had observed in Senegal concerning the absence of a notion of point-of-view, I became very skeptical when theory of mind became popular in cognitive development research. The claims for universality of the sort of calculus that requires a participant to know, for example, what someone knows a third party has said to a fourth party (e.g., Does Mary know the ice-cream man has talked to John?), Baron-Cohen,

1989) seemed to be a generalization of a world view and those are not the same. I might be be through the i search and lectivistic alt search event title, "Cultu sal Developn which I pres

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1989) seemed to involve too much differentiation of viewpoints for children whose world view emphasized unity with the world and those around them. I wanted to think through the individualistic assumptions that might be being made in this line of research and to think about what a collectivistic alternative might look like. This search eventuated in one section of an article, "Cultural Pathways through Universal Development" (Greenfield, et al., 2003), which I present here.

Understanding self and others is part of our universal evolutionary heritage (Tomasello, 1999; Whiten, 2002). The mirror neuron system of the cerebral cortex reveals a common neuromuscular activation for acting oneself and for understanding the actions of others (Fadiga et al., 1995; Iacoboni et al., 1999). In ontogeny, the first step in understanding self and others occurs at birth, when infants discriminate people from things (Trevvarthen, 1980). Comprehension of agency as the production of goal-directed action begins in early infancy (Gelman & Lucariello, 2002). An ability to distinguish between self and others as intentional agents develops at eight or nine months of age (Piaget, 1952; Tomasello, 1999; Trevvarthen, 1980).

At the one-word stage of language development (between one and two years of age), infants code the intentional action not just of self but of others (Greenfield & Smith, 1976; Greenfield, 1980), and this encoding seems to have ancient phylogenetic roots (Greenfield & Savage-Rumbaugh, 1990; Greenfield & Lyn, in press). The linguistic encoding of intentional action becomes more complex with age and the acquisition of language (Bloom, Lightbown, & Hood, 1975). At the same time, there is very early understanding of the effects of action on other people. Script knowledge, which begins in the second year of life, involves the understanding of both intentions and effects of human action (Gelman & Lucariello, 2002). It also requires an understanding of the coordination of action by more than one person.

These two universal capacities – the capacity to encode the intentions of self and

others and the capacity to encode the social effects of one's own and others' action – provide the groundwork for two distinct cultural emphases in the development of person knowledge. Some cultures emphasize the individual psyche, individual traits, and the individual intentions behind action (Vinden & Astington, 2000); other cultures emphasize the social effects and social context of a person's action (Duranti, 1988, 1993; Shweder & Bourne, 1984; Fiske et al., 1998). The latter also see mind and heart as integrated rather than separate (Lillard, 1998; Zambrano, 1999). We see the former as the individualistic emphasis and the latter as the collectivistic or sociocentric emphasis.

Most literature on theory of mind – the ability to think about other people's mental states – has assumed an emphasis on individual minds (Flavell, 1999). I, however, see theory of mind as a special culturally canalized case of person knowledge (cf. Hobson, 1993). I therefore review the literature indicating the existence of these two different cultural emphases – individual psyche versus social effects or context – in the development of social understanding or person knowledge.

Although it claims universality, I utilize the classical literature on theory of mind to complete the picture of the individualistic pathway to person knowledge. Early steps along this pathway have to do with the acquisition of mentalistic terms; children as young as twenty-two months first produce mentalistic terms such as *know* and *pretend* (Wellman, 1990). Later, the child is able to imagine a mental state of affairs in another person different from the information available to oneself (e.g., Perner, 1991). Similar trends occur in literate, developed countries, both Western and non-Western (Wellman, Cross, & Watson, 2001). The differentiation and individuation of people according to their states of mind is basic to this developmental pathway to social understanding.

In the other pathway, however, mentalistic terms are lacking in the lexicon, are not understood in the same way as the English equivalents, and are not applied to oneself. This phenomenon has been found in a

number of subsistence ecologies (Greenfield & Bruner, 1966/1969; Vinden, 1996, 1999). As mentioned earlier, however, both schooling, with its demand for justifications, and literacy, with its separation of thought (on paper) from thinker, leads to an understanding of the mentalistic term *think* (Greenfield & Bruner, 1966/1969). (See Lillard (1998) for a cross-cultural review of the theory-of-mind literature).

In a nonliterate subsistence ecology in Africa, children between two and four years old were given a theory-of-mind task embedded into a context of social action. In addition, the task used the term *heart* rather than *thought* (Avis & Harris, 1991). Under these circumstances, Baka children in southeast Cameroon showed the development of social understanding that had been found in the United States and Europe. The results contrasted strongly with another study that (1) decontextualized the task, presenting it as a task involving only one actual person, the subject; (2) asked about the deceived's thought rather than action in reference to a hidden object; and (3) asked about mind rather than heart. Under these conditions, Quechua children between about four and eight performed at chance levels (Vinden, 1996). Somewhat more contextualized tasks led to somewhat improved performance in subsistence groups in Cameroon, West Africa (the Mofu), and Papua New Guinea (the Tainae and Tolai) (Vinden, 1999).

Meta-analysis indicates that, around the world, children from subsistence cultures solve theory-of-mind tasks better when these are presented in context (Wellman, Cross, & Watson, 2001). However, Vinden (1999) found a lag in age in all groups relative to children of European-derived cultures; false belief (the understanding that another person has been misled into believing that something is true that, in fact, is false) assessed using the word "think" was at chance levels at all ages in the two groups most isolated from the outside world of European culture.

Here we interpret a lag as indicating that the skill in question is not valued in

a particular culture (LeVine, 1997). "With a collectivist or group orientation, personal, mental, and emotional states are relatively unimportant" (Vinden & Astington, 2000, p. 512). In line with the notion that school ecology favors the development of attention to the individual psyche, schooled children performed better on several of the tasks relating to predicting an individual's behavior or emotion in a nonsocial situation (Vinden, 1999).

On the other hand, in a culturally important situation involving social responsibility, young children from small, face-to-face societies with subsistence traditions show advanced understanding of the knowledge state and feelings of another person whose knowledge differs from one's own. In a successful apprenticeship situation, the expert must be aware of how much less the novice knows in comparison with self. The expert must also be aware of the novice's need for materials and the novice's motivations. In a video study of naturalistic teaching interactions, Zinacantec Maya children as young as four years old were able to supply necessary materials and model tasks for their younger siblings (Maynard, 2002). They were also able to provide useful verbal guidance in teaching, such as narrating a task they were demonstrating and giving commands to the younger child. By the age of eight, children were very adept at simplifying the task for younger children by giving them parts of tasks, one at a time, and at scaffolding the task by providing complex verbal information. These advanced thinking skills showed an understanding of the knowledge state, material needs, and motivation of the younger children. Sibling caregiving as an important social responsibility may have played a role in the young children's desire and skill in teaching their younger siblings. Similar sibling teaching practices were found in another sibling-caregiving culture—the Wolof of Senegal (Rabain-Jamin, Maynard, & Greenfield, 2003). Future research is needed to explore the relationship between the cognitive operations of person knowledge in sibling caregiving and in experimental tasks.

Indeed, it is not that person knows so frequently but theory-of-mind the participant other person has false belief) from task that requires perspective from it is an important component of the that socialization emphasizes *shared* different perspective can tell us why reason for relationship false-belief task cultures.

Ideally, cross involve a development tapping into both within the communities. A pioneer in India a Miller (1984) both the United at social explanation development) in the United their social explanation of an individual the individual contrast, increased explanations particularly false (emphasis on).

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Indeed, it may be culturally significant that person knowledge has been measured so frequently by false belief, the dominant theory-of-mind task. In a false-belief task, the participant must understand that another person has a different perspective (the false belief) from his or her own. It is a task that requires individuation of one's perspective from that of another. Individuation is an important component of the development of the independent self. It may be that socialization in interdependent cultures emphasizes *shared* perspectives more than *different* perspectives. Only future research can tell us whether this may be another reason for relatively poor performance on false-belief tasks in collectivistic, subsistence cultures.

Ideally, cross-cultural comparison would involve a developmental analysis of tasks tapping into both of these cultural emphases within the context of universal developments. A pioneering study of social explanation in India and the United States by Joan Miller (1984) did exactly that: Children in both the United States and India improved at social explanation with age (the universal development). At the same time, children in the United States increasingly formulated their social explanations of events in terms of an individual's stable traits (emphasis on the individual psyche). Indian children, in contrast, increasingly formulated their social explanations in terms of contextual factors, particularly factors in the social surround (emphasis on social context).

Miller's findings were replicated in a real world situation by Morris and Peng (1994). They found that when a Chinese physics student at the University of Iowa shot his advisor and several other people after losing an award competition, the reasons given were quite different in U.S. and Chinese newspapers:

Michael Morris, a graduate student at Michigan at the time, noticed that the explanations for Gang Lu's behavior in the campus newspapers focused almost entirely on Lu's presumed qualities – the murderer's psychological foibles ("very bad temper," "sinister edge to his character"), atti-

tudes ("personal belief that guns were an important means to redress grievances"), and psychological problems ("a darkly disturbed man who drove himself to success and destruction," "a psychological problem with being challenged"). He asked his fellow student Kaiping Peng what kinds of accounts of the murder were being given in Chinese newspapers. They could scarcely have been more different. Chinese reporters emphasized causes that had to do with the context in which Lu operated. Explanations centered on Lu's relationships ("did not get along with his advisor," "rivalry with slain student," "isolation from Chinese community"), pressures in Chinese society ("victim of Chinese 'Top Student' educational policy") and aspects of the American context ("availability of guns in the U.S."). (Morris & Peng, pp. 111–112).

Morris and Peng found the same pattern of differences when the incident involved a student from the United States. The Chinese focused on the killer's relation to context, particularly social context, in explaining his behavior. U.S. reporters focused on qualities of the individual. A whole series of experiments on causal attribution led to the conclusion that "Westerners attend primarily to the focal . . . person and Asians attend more broadly to the field and to the relations between the object and the field" (Nisbett, 2003, p. 127). Thus, a pattern of cultural differences found in the developing child by Miller also show up in adulthood, the endpoint or outcome of development.

Hong Kong is a setting in which two cultures, one more collectivistic (Chinese) and one more individualistic (British) coexist. Hong et al. (2000) showed the dynamism of the bicultural mind in the arena of social explanation. When primed with symbols of Western culture (e.g., Mickey Mouse) in an experiment concerning social explanation (participants had to explain why, in a picture, one fish was swimming in front of the other fish), participants constructed more explanations in terms of individual motivation. When primed with symbols of Chinese culture (e.g., with a dragon), participants constructed more explanations in terms of the other fish or the context.

These same differences in thinking about people can affect a sense of one's own continuity of self over time. Parallel to the two modes of social explanation discovered by Miller, researchers Lalonde, Chandler, and Sokol (1999) identify two cultural modes of addressing the problem of self-continuity over time in autobiographical narratives. This is the problem of how to experience and conceptualize a continuing self in the presence of dramatic changes over the course of development. They term the first model "an 'Essentialist' or 'Entity' notion of selfhood" (Ref. 55, 1999, p. 1); these narratives focus attention upon some aspect of the self "that is thought to remain untouched by time and change" (Lalonde, Ref. 55, 1999, p. 1). The pathway of the independent, autonomous self requires a source of self-continuity that is functional in the face of separation from parents, the modal adolescent identity formation in the United States and Canada. Internal essences or entities would fill this requirement; this is the way in which most non-Native Canadians explain self-continuity (Chandler et al., 2003). And, as we have seen from Miller's research, internal traits or essences are generally used in causal attribution in the individualistic paradigm.

They call the second model a "relationship-centered" notion of self. It uses narrative to connect the self across different time periods. The narratives often situate the speakers in family and community relationships that continue across various periods in the life cycle. This is the way most Native Canadians explain self-continuity (Lalonde, Chandler, & Sokol, 1999).

Thinking about Things: Categories, Physical Relations, and Social Relations

A more collectivistic ethnotheory of intelligence that values relationships and social utility can explain why the wise Kpelle person would make functional pairs in a cat-

egorization task, rather than sort by taxonomic categories. Taxonomic categories, in contrast, revolve around a defining trait or traits of its members. These defining traits are decontextualized from the social utility of the object or from other parts of the physical world. We saw this same contrast between an emphasis on inner traits that transcend context and contextualized explanation when we examined two paradigms of social reasoning (Miller, 1984).

If the Kpelle mode of categorization typifies a collectivistic worldview, then it should appear in other collectivistic cultures. Indeed, this is the case. Ji, Zhang, and Nisbett (2002) compared U.S. college students with students from China and Taiwan on a triadic test of categorization. In each triad (e.g., panda, monkey, banana), there were two pictures that could be paired on the basis of taxonomic similarity (in this triad, panda and monkey are both animals), and there were two that could be paired on the basis of functional relationships (in this triad, the monkey eats the banana). When asked which two of the three pictures were most closely related, U.S. college students preferred to group "on the basis of common category membership: Panda and monkey fit in to the animal category." The Chinese participants showed a preference for grouping on the basis of thematic relationships (e.g., monkey and banana) and justified their answers in terms of relationships: "Monkeys eat bananas" (Ji, Zhang, & Nisbett, 2002, p. 140-141). This same cross-cultural difference developed in childhood (Chiu, 1972). But, again, cultural preferences do not necessarily exclude the development of a minor mode. Illustrating this point, a study by Wisniewski and Bassok (1999) indicates that, in the absence of a forced choice between the taxonomic similarity and functional relationships, U.S. college students can and do use both modes of thought as an implicit basis for similarity judgments and other cognitive operations.

Perhaps the most basic difference between the two modes of thinking is the collectivistic tendency to contextualize the world of objects in a web of social relations

versus the individualistic tendency to sort objects into categories. The world of physical objects is seen as existing on its own plane of reality, independent of the social context. This is the world that we saw in the causal reasoning of the schooled Wolof child. These two modes of thinking are socialized very early in life (Miller, 1990; Clancy, 1998; 1993; Rabain, 1993; Zempléni-Rabain, 1993).

Cross-Cultural Counts as Thinking

When families with different cultural heritages immigrate to a new society, the two modes of thinking often come into sharp conflict, particularly in the natural models of thinking. For example, to them – what comes first? What takes priority over epistemologies – what is the source of knowledge? These cultural models normally remain implicitly interacting in the mind. In the same model, the two modes of thinking does not conflict. It provides an underlying structure that makes sense of the world in school – run smoothly. It is about what happens in the classroom when teachers' thinking is implicit and understood as thinking.

In a pre-kindergarten, a teacher held an actual conversation with the children to find out about the time they had eaten eggs. One child said, 'I ate an egg with her grandpa.' The teacher disregarded this and asked the child who ate the egg, 'white and yellow?' (Greenfield, 1993).

The two features of the child's emphasis on the teacher's disapproval of the child's seemingly

versus the individualistic tendency to see the world of physical objects as operating in its own plane of reality. The former is what we saw in the causal reasoning among the unschooled Wolof children; the latter is what we expect in the world of physical science. These two modes of thinking about things are socialized very early (Bakeman et al., 1990; Clancy, 1986; Fernald & Morikawa, 1993; Rabain, 1979; Rabain-Jamin, 1994; Zempléni-Rabain, 1973).

Cross-Cultural Conflict in What Counts as Thinking

When families with a collectivistic cultural heritage emigrate to an individualistic society, the two paradigms can come into sharp conflict, particularly at school. Cultural models not only have values attached to them – what counts as good and bad, what takes priority over what – but they also have epistemologies – what counts as knowledge. These cultural models are so basic they normally remain implicit. As long as everyone interacting in the same social world shares the same model, the implicit quality of the models does not cause a problem. In fact, it provides an underlying set of shared assumptions that makes social life – for example, life in school – run smoothly. The next example is about what happens in a bicultural classroom when teachers and learners have different implicit understandings of what counts as thinking.

In a pre-kindergarten class, the teacher held an actual chicken egg. She asked the children to describe eggs by thinking about the times they had cooked and eaten eggs. One of the children tried three times to talk about how she cooked eggs with her grandmother, but the teacher disregarded these comments in favor of a child who explained how eggs are white and yellow when they are cracked.

(Greenfield, Raeff, & Quiroz, 1996).

The two features of this incident – the first child's emphasis on a family-based story and the teacher's disregard and devaluation of the child's seemingly unscientific answer –

occur frequently in classrooms with immigrant Latino students. But what is really happening here?

Our theoretical analysis rests on the following two points: What counts as thinking for the teacher is thinking about the physical world apart from the social world. It is the teacher's definition of scientific thinking, and, in her mind, this is a science lesson. Her focus is on one part of her instructions, "Describe eggs." The child, in contrast, is responding more to the other part of the teacher's instructions – "Think about the times you have cooked and eaten eggs" and, based on a different set of assumptions about what counts as thinking, focuses on the social aspect of her experience with eggs, in particular, a family experience. This is the first aspect of the misunderstanding and cultural mismatch between teacher and learner.

The second aspect of the mismatch is that the child who was passed over is providing a narrative, also valued in her home culture, whereas the teacher is expecting a simple statement of fact. Implicitly, the teacher is making Bruner's distinction between narrative thought and logical-scientific thought. Bruner's analysis is very relevant here:

There appear to be two broad ways in which human beings organize and manage their knowledge of the world, indeed structure even their immediate experience: One seems more specialized for treating of physical "things," the other for treating people and their plights. These are conventionally known as logical-scientific thinking and narrative thinking. (Bruner, 1996, p. 39).

The child who talks about cooking and eating eggs with grandmother is responding in the narrative mode; but the teacher expects the logical-scientific mode: "What are the bare facts about eggs?" she wants to know. Narrative is, in the dominant culture, associated with the humanities, logical-scientific thought is associated with the sciences. As Bruner says, the value of logical-scientific thinking "is so implicit in our highly technological culture that its inclusion in school curricula is taken for granted" (Bruner, 1996,

41). It is so taken for granted that, as the incident shows, the narrative mode becomes invisible to the teacher.

Logic

The same type of contrast applies to logical thought (see Evans, Chap. 8). Deductive logic is intrinsically decontextualized from its content (Nisbett et al., 2001; Nisbett, 2003). We therefore would expect it would be part of individualistic but not collectivistic habits of thought. Instead, a collectivist might recontextualize a deductive problem. This phenomenon was first identified by Luria in the 1930s with uneducated Soviet peasants in Central Asia (Luria, 1971). Inspired by Luria, Cole et al. (1971) gave such problems to nonliterate Kpelle adults in a rural area of Liberia. Here is an example of a deductive logic problem and how the participant refuses to deal with the decontextualized structure and, instead, recontextualizes it, first by asking more questions concerning context and then by applying his own experience to the problem:

EXPERIMENTER: *At one time spider went to a feast. He was told to answer this question before he could eat any of the food. The question is: Spider and black deer always eat together. Spider is eating. Is black deer eating?*

SUBJECT: *Were they in the bush?*

EXPERIMENTER: *Yes.*

SUBJECT: *They were eating together?*

EXPERIMENTER: *Spider and black deer always eat together. Spider is eating. Is black deer eating?*

SUBJECT: *But I was not there. How can I answer such a question?*

EXPERIMENTER: *Can't you answer it? Even if you were not there you can answer it.*

SUBJECT: *Ask the question again for me to hear.*

EXPERIMENTER: *(repeats the question)*

SUBJECT: *Oh, oh black deer was eating.*

EXPERIMENTER: *Black deer was eating?*

SUBJECT: *Yes.*

EXPERIMENTER: *Black deer was eating?*

SUBJECT: *Yes.*

EXPERIMENTER: *What is your reason for saying that black deer was eating?*

SUBJECT: *The reason is that black deer always walks about all day eating green leaves in the bush. When it rests for a while it gets up again and goes to eat.*

(Cole et al., 1971, p. 187).

In essence, this participant rejects the abstract, decontextualized structure of the logical problem. This type of response was typical of a group of nonliterate Kpelle adults. In line with our notion of school as promoting an individualistic worldview, Kpelle high school students generally answered the logical problems in the way the researchers had in mind – as decontextualized logical deductive problems.

Again, if this distinction is typical of the two paradigms of thought, it should apply to other groups who might differ on the individualism–collectivism worldview. Using different methods, Nisbett and his colleagues showed that East Asians, like the Kpelle, rejected decontextualized abstract logic and preferred to reason on the basis of experience (Nisbett et al., 2001).

Visual Pattern Construction: A Case of Historical Change

The worldwide direction of change on all critical demographic variables – toward greater population density, formal education, technology, and commerce-based wealth – yields an historical push toward the pole of individualism. I will use the domain of visual representation to provide an example of how historical change can move cognition in the direction of the individualistic paradigm of thought. One of the marks of a collectivistic cultural system is respect for elders and their traditions. The individualistic side of this coin places a value on novelty and innovation. The typical economy in which respect for elders predominates is agricultural subsistence. Innovation, in turn, is an important value in commercial entrepreneurship. An experiment demonstrated how a shift from one economy to another affected the representation of culturally novel patterns.

In 1969 and 1970, I conducted a presentation experiment in a community of Chiapas (field & Childs, 1977) through other things, continuing novel and culturally fashionable weaving) striped perimeter would place different colors in a rectangular providing three repetitions (for example, green, green, green would be a single repetition patterns). She would be subject to continue the same time, the dominant economic subsistence with or commerce.

I returned to the community after a period of economic change which commercial entrepreneurship had grown corresponding decline in subsistence. I predicted that the novel (not familiar) patterns increased, and this is exactly what happened. Even more interesting was this skill with novel rejection to participation in commerce had been uneven, and children were most involved in commerce in both their business and subsistence. The novel patterns. Striped weaving indicated a causal correct completion of commercial involvement.

At the same time when weaving was the primary learned by all girls, the patterns in woven patterns from the earlier period, of about four patterns, were wove for clothing and poses. By the time when the basic patterns still been supplemented with innovation through created an infinite number of brodered designs. So culturally novel patterns was a reflection of change

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In 1969 and 1970, I did a pattern representation experiment in a Zinacantec Maya community of Chiapas, Mexico (Greenfield & Childs, 1977) that involved, among other things, continuing both culturally novel and culturally familiar (from traditional weaving) striped patterns. The experimenter would place sticks of different colors in a rectangular wooden frame, providing three repetitions of the pattern (for example, green, green, green, yellow would be a single repetition of one of the patterns). She would then ask the subject to continue the same pattern. At that time, the dominant economy was agricultural subsistence with relatively little cash or commerce.

I returned to the community in 1991 after a period of economic development in which commercial entrepreneurship and a cash economy had grown greatly with a corresponding decline in agricultural subsistence. I predicted that skill in continuing novel (not familiar) patterns would have increased, and this is exactly what I found. Even more interesting, I was able to relate this skill with novel representations directly to participation in commerce. Change had been uneven, and children whose families were most involved in commercial activities in both their business dealings and as consumers showed the most skill in constructing the novel patterns. Structural equation modeling indicated a causal relationship between correct completion of the novel patterns and commercial involvement.

At the same time in this community, where weaving was the most important skill learned by all girls, there had been a shift in woven patterns from tradition to novelty. At the earlier period, there was a closed set of about four patterns that girls and women wove for clothing and other utilitarian purposes. By the time we went back in 1991, the basic patterns still existed, but they had been supplemented by an ongoing process of innovation through girls and women who created an infinite number of woven and embroidered designs. So skill in representing culturally novel patterns in our experiment was a reflection of change in the culture as a

whole as it moved from subsistence agriculture to money and commerce.

In terms of the socialization processes that could develop these new cognitive styles, we found an historical change in weaving apprenticeship that also had moved toward a more individualistic model. In commercial families, weaving apprenticeship had, between 1970 and the early 1990s, moved from help and guidance from the teacher to a more independent trial-and-error learning process for the novice weaver. Moreover, we also found a correlation between the more independent, individualistic mode of weaving apprenticeship skill and continuing the novel patterns in our experiment.

So these basic cultural paradigms of thinking are not constant. They are adaptations to social conditions, including socialization processes, that change over time. As the world becomes more commercial, more dense, and more formally educated, the Zinacantecs illustrate this worldwide trend from a more collectivistic to a more individualistic paradigm of thought.

CONCLUSIONS AND FUTURE DIRECTIONS

Identifying two basically different paradigms of thought, value, and behavior has linked together phenomena in the domain of culture and thinking that were once considered unrelated. With this linking thread has come deeper understanding of basic cultural differences. Although providing theoretical coherence, it has also removed some of the ethnocentrism from earlier accounts of difference, in which, for example, collectivistic forms of categorization, reasoning, and logic were considered the absence of Western skills rather than as examples of a different set of values about the nature of intelligence.

The primary omission in the preceding account is probably the ecocultural approach to everyday cognition and particularly the role of cultural artifacts in thinking. For good reviews from these perspectives, I recommend *Everyday Cognition* by Schliemann, Carraher, and Ceci (1997) and *Culturally Situated Cognition* by Wang, Ceci,

Williams, and Kopko (2004). The empirical body of work generated by these approaches is not at all antithetical to the theoretical paradigm presented here. In the future, I believe further theoretical integration will take place.

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