11

ETHNOEPISTEMOLOGIES AT HOME AND AT SCHOOL

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Both intelligence and knowledge acquisition represent core human com-
petencies. Yet they do not mean the same thing around the world. There is
by now a rich tradition of theory and data on cultural conceptions of intelli-

gence (Dasen, 1984; Gill & Keats, 1980; Grigorenko et al., 2001; Nsamenang, 1992; Serpell, 1993; Super, 1983; Wober, 1974). This body of work, stemming from the field of cultural psychology, makes it clear that our Western presuppositions about the nature of intelligence are not the only ones. However, most researchers, like most lay people, would probably be surprised to learn that there are alternative conceptions of a closely related set of notions: knowledge and knowing. Because these concepts are central to the fields of cognitive psychology and cognitive development, they are particularly interesting to explore from the perspective of cross-cultural variability.

Why is our chapter titled "Ethnoepistemologies at Home and at School?" The term *epistemology* comes from the discipline of philosophy and refers to an explicit, formal theory of knowledge. *Ethnoepistemology*, the key word in our title, refers to the thesis of this chapter: Different ethnic groups have their own implicit, informal theories of knowledge and that these ethnotheories form the assumptions on which the explicit formal theories are based.

As an example of variability in the conception of knowledge, we contrast the Tzotzil Mayan term *na'* (know) with the English word *know*. Although *na'* clearly glosses as "know" (Laughlin, 1975) and even overlaps with it, its core meanings are surprisingly different. *Na'* is much more demanding in key respects, such as in its reference to practice. However, in a world in which different cultures have been in close contact—through involuntary processes such as conquest, voluntary processes such as immigration, and systemic processes such as economic globalization—different ethnoepistemologies can also come into contact. And this is exactly what has happened to *na'* and *know* in the Tzotzil-speaking community of Mitontik. *Na'*, as we shall show, epitomizes indigenous values concerning knowledge, whereas *know* is highly valued in the school, an institution that has been imposed on Mayan communities from outside.

Know and *na'* allow us to explore the cultural nature of knowledge and knowing and the intellectual and social competencies they index. These competencies consist of cultural forms of intelligence, which in turn presuppose cultural forms of knowing. Contrasting forms of knowledge have important implications for developmental theory as well as for cognitive psychology. We therefore move from cultural conceptions of intelligence to cultural conceptions of knowledge, and, from there, to implications for developmental and cognitive psychology. Although cultures differ in their emphasis on the two kinds of knowledge indexed by *know* and *na'*, we end by discussing how both forms of knowledge exist side by side in a single culture.

CULTURAL CONCEPTIONS OF INTELLIGENCE

In developmental psychology, the classical theory of intelligence is that of Piaget. Understanding the basis for Western scientific thought was Piaget's

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most fundamental theoretical concern (Piaget, 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 (Greenfield, 1974). Clearly, scientific intelligence involves the acquisition of scientific knowledge; hence the close connections between theories of intelligence and theories of knowledge.

Although Piaget considered his theory to be universal, it has turned out to rest on an ethnotheory, a culture-specific concept of intelligence. We know this because its assumptions are not shared around the world. Indeed, in sharp contrast to the value of scientific intelligence, social intelligence has been found to be the predominant ideal in Africa and Asia (e.g., Dasen, 1984; Gill & Keats, 1980; Grigorenko et al., 2001; Serpell, 1993; Super, 1983; Wober, 1974). For example, the central feature of the Baoulé concept of intelligence is willingness to help others (Dasen, 1984). This quality of intelligence privileges social understanding, a quite different form of knowledge than that privileged by scientific intelligence. As we will see with *know* and *na'*, in Africa, competing ethnotheories of intelligence may be operative at home and at school, the latter being of European origin (Dasen, 1984).

Whereas the most comprehensive theory of development in Europe is Piaget's theory of cognitive development, the most comprehensive theory of development in Cameroon, West Africa, is that of Nsamenang, who outlines stages of development in terms of social roles (Nsamenang, 1992). 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).

As we have seen, particular conceptions of intelligence privilege particular conceptions of knowledge. In this chapter, we focus on two different conceptions of knowledge, one indexed by the Tzotzil Mayan word *na'*, the other indexed by the English word *know*. As we will show, in San Miguel Mitontik, the Tzotzil word *na'*, meaning to know, has a more person-centered meaning, compared with the English word *know* (Zambrano, 1999). Whereas to "know" in English always involves the mind, *na'* often involves the heart and soul. (According to Li [2002], a similar concept of "heart and mind for wanting to learn" is found in China.) Whereas "knowing" connotes factual knowledge, theoretical understanding, or know-how, *na'* also connotes knowledge of practice that is habitual and characteristic of a given person; it is very much akin to character. The former type of knowledge is more important in a culture valuing the individual's possession of credentialed knowledge. The latter is more important in a culture placing a greater value on social character. Both coexist in San Miguel Mitontik; however, *na'* a Tzotzil word, originates in the indigenous Maya culture and is traditionally valued at home. *Know* (or *saber* in Spanish) originates in the school, imposed on Mayan communities by the Spanish-speaking Mexican state, the institutional inheritance of the Spanish conquest.

METHODOLOGY

Isabel Zambrano, an anthropologist, identified the revealing contrast between *na'* and *know* during 10 years of ethnographic and historical research in the Tzotzil-speaking highland Maya community of San Miguel Mitontik. (The people often refer to themselves as Migueleros, and the short name of the community is simply Mitontik.) In this chapter, we combine Zambrano's insights about *na'* in Mitontik with findings from Patricia Greenfield's long-term (begun in 1969) field research in Zinacantán; Greenfield is a cultural and developmental psychologist. In addition to Zambrano and Greenfield's work, further examples are taken from Eber and Rosenbaum's (1998) studies of Chenalhó and Chamula, also in highland Chiapas, from Maynard and De Leon's studies in Zinacantán, and from Gaskin's research among the Yucatec Maya. But, although most of our examples come from a few rural Maya communities in north central Chiapas (see Figure 11.1), the epistemological findings have implications for other Maya communities and other non-Maya face-to-face (local) contexts.

In her ethnography, Zambrano (1999) acted as a participant–observer in Mitontik and the nearby city of San Cristobal de las Casas, recording observations of everyday life into her field notes, while getting to know the language, the ideas, the lifeways, and the people of the community. Her experiences, recorded in field notes, furnished examples of *know* and *na'*. Ethnography is a core methodological concept from anthropology; its individualized and contextualized nature contrasts sharply with the methodology of cross-cultural psychology, in which standardized procedures, such as IQ tests, are typically administered across multiple cultural settings (Greenfield, 1997). Zambrano also used historical data from official government archives to find out about the history of schooling, relevant to changing conceptions of the nature of knowledge.

Greenfield and colleagues (Greenfield, 1999, in press; Greenfield, Maynard, & Childs, in press) took her methods from cultural psychology, a field that amalgamates psychology and anthropology. Indeed, this chapter is in itself an interdisciplinary endeavor, authored by an anthropologist and a psychologist and combining methodology and concepts from the two disciplines. As is normative in cultural psychology, Greenfield's procedures were derived from and adapted to Zinacantec culture and then standardized within the community. They were not meant to "travel" abroad. Most pertinent to the topic of this chapter, she made videotapes of girls at various stages of learning to weave, a culturally valued form of knowledge.

Gaskins (1999) and Maynard's (1999, 2002) studies followed in this tradition of cultural psychology, while Eber (Eber & Rosenbaum, 1998) worked in the anthropological tradition of Zambrano. De Leon (1999) is a linguistic anthropologist, who, like Greenfield, uses video as a record-keeping tool, but, in the anthropological tradition, does not try to standard-

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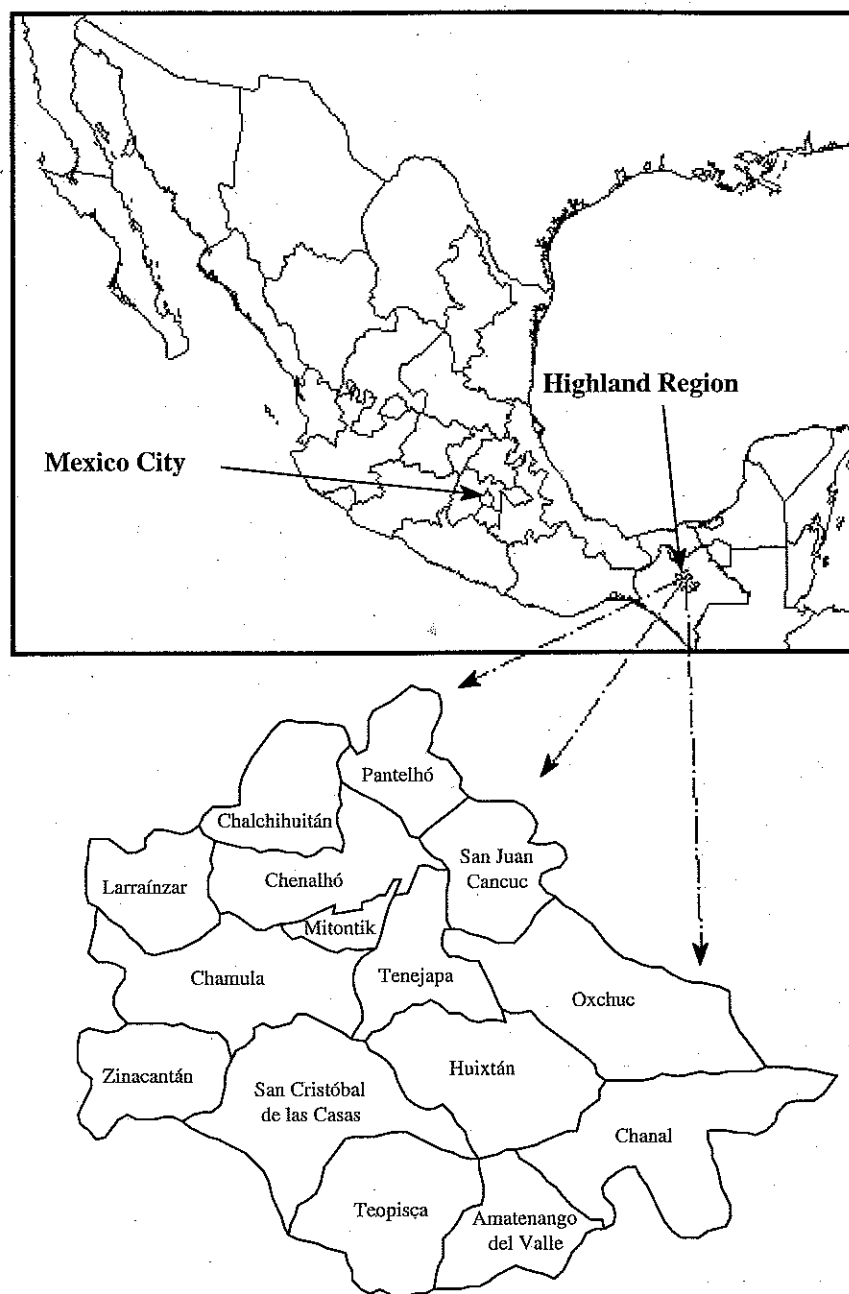ages of

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Figure 11.1. The highland region of Chiapas, Mexico (gray section) in national context.

ize the situations that she videotapes. To capture naturally occurring inter-
action among a few interactants takes precedence over the achievement of
comparability across large numbers of participants. Because the most signifi-

cant feature of culture for a cultural or linguistic anthropologist is the process of constructing meaning and because language is the human tool par excellence for doing this, what people say—that is, their spontaneous interpretations of their own experience—is a prime data source in these fields (e.g., Duranti, 1997). We begin with some ethnographic examples from Zambrano's extensive fieldwork in Mitontik. From spontaneous talk in defined contexts emerges a cultural interpretation of knowing and knowledge.

AN INTRODUCTION TO NA': DO YOU KNOW THE DRINKING OF SODA?

Zambrano was first introduced to the special nature of *na'*-type knowledge when some Mitontik friends extended her their special brand of hospitality by asking "*Mi xana' yuch'el rasqu?*" Instead of directly asking "Would you like something to drink?" her Miguelero friends posed a question that, literally translated, means "Do you know the drinking of soda?" (*rasqu*, from *refresco*, the regional Spanish word for soda pop). This question may be particularly posed to foreign guests as an inquiry as to whether people from another land are used to (or are in the habit of) drinking this particular type of beverage.

Although these invitations to have a soda were important and usually hard-won marks of acceptance and friendship, they left Zambrano wondering, "Why does this simple offer of a soda require a reference to knowledge?" and "What form of knowledge would that be?" Even with this first encounter, it seemed clear to Zambrano that the *na'* form of knowledge had *practice*, especially habitual practice, as one of its core meanings.

A second example of the use of *na'* occurred during a Mitontik graduation dinner. A delightful one-and-a-half-year-old girl smiled and made friendly gestures toward Zambrano—then a stranger to her—throughout the meal. The child's behavior was striking because most infants and toddlers in Mitontik, as in other highland Maya communities, are extremely wary of people from outside of their household. Leonor, the student whose graduation was being celebrated, noted the interaction and remarked, in Spanish, "*No sabe tener miedo*" —literally, "The child doesn't *know* how to have fear." Leonor's remark was about how the child's behavior characterized her— namely, "She is an open, friendly child." In the future, this unusual little girl might be identified as the one who is so open, who "doesn't *know* how to be wary." Along the same lines, other Migueleros warned Zambrano about unfriendly people who "don't know how to speak (nicely)"; a person with a temper is often described as one who "knows how to get angry"; and a gentle husband might be admired as one who "does not know how to hit his wife."

The conception of knowledge assumed in all of these examples is a knowledge of practice so habitual that it characterizes. The soda pop ex-

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ample points to habitual practice as one of the core meanings of na'; the other examples further establish term's reference to the type of knowledge-practice that can be used to characterize a knower–doer. In the latter sense, na'-based characterizations assert a relationship between a person's knowledge–practice and her or his reputation in a community.

As a local form of knowledge that is practicable, demonstrable, and habitual to the point of being characteristic, na' bears a strong resemblance to Bourdieu's (1977/1986) notion of *habitus* and thus to Bateson's (1936/1958) notion of *ethos* before it. Bourdieu and Bateson are fairly similar in using their terms to refer at once to (a) the social and cultural context itself, (b) the classifying and generative schemes inculcated into the individual, and (c) the resultant practices of the enculturated individual herself or himself, the individual who has been socialized into a culture. It is easy to imagine *habitus* and *ethos* as generalizations about a group's knowledge-related practices and the underlying concepts that generate them. However, the concept of na' allows us to consider greater complexity with respect to voice (that is, varying perspectives among the people being studied), history (the origins of conflicting concepts of knowledge), and representation (people's own comments about knowing and knowledge in different settings and situations). These differences make na' a more apt term for understanding social change.

Instead of the coherence of local knowledge emphasized in the concepts of *habitus* and *ethos*, na' forces one to focus on the roles of local dialogue and cross talk in the construction of culture. As a term used solely by members of a face-to-face community as they try to make sense of and affect each other and the dynamic world around them, na' refers to the knowledge link between an individual or subgroup in the community and Mitontik's moral and communicative universe: namely, how she–he–they are known and knowable and the epistemological implications of that knowledge. As a knowledge link, na' refers not only to the material, social, and cultural matters (including everyday practices) that *habitus* and *ethos* presume to capture, but also to local commentaries on na' and self-representations designed to minimize negative na' commentaries. Indeed, it is these commentaries and self-representations that produce those cultural schemes, contexts, and practices.

Na' is thus in line with recent approaches that view culture "as emerging from events as much as underlying them" (Tsing, 1993, p. 105). In other words, the notion is that people produce culture, not vice-versa (Rockwell, 1996). This concept of people producing culture contrasts strongly with the notion foundational to cross-cultural psychology and common in psychology in general: culture as an independent variable that "causes" individual behavior, which is in turn seen as a dependent variable.

Na' characterizations—that is, describing people in terms of their habitual practices—are like gossip in being particularly effective means of constructing knowledge in that they influence community perceptions and other

forms of socialization. As Haviland has observed, gossip "helps map the community for its members" (Haviland, 1977, p. 10). For instance, it is through gossip with kin relations and other social networks that individuals can efficiently learn about desirable and undesirable associates and the most profitable way to interact with them. Thus, gossiping about an "unfortunate old man allows the participants to . . . decide together what to think about the man himself, and . . . assess the causes for his misfortune and guide their future actions accordingly" (Haviland, 1977, p.164). The characteristic practice referred to as *na'* (as opposed to knowledge that is unique, one-time only) and its consequences may be a particularly instructive way for local members of a community to learn about any given life situation. The close relationship between a person's habitual behavior (*na'*) and her or his reputation (community-held identity) may also be a particularly effective way of influencing community perceptions (Basso, 1983, 1988, 1996). For example, individuals with particularly extravagant conduct become "social banners" —that is, they come to "signify" and "embody," and thus are seen as challenges to correct behavior in a small, face-to-face community. Stories about them can be read as a "social text on the subject of human decency": They become "effective vehicles of propaganda . . . necessary precisely because the maintenance of a given symbolic order is always as problematic as its change" (Scott, 1985, pp. 22–23). *Na'* commentaries (commentaries about people's characteristic practices) are thus vital forms of intelligence gathering and intelligence making, intelligence that concerns the maintenance of social norms.

One important difference between *na'* and the important notion of "gossip" is that *na'* involves a theory of knowledge—namely, of which knowledge is privileged and recognized and which is not. One clear example from Zambrano's fieldwork is that if she asked a third party about a person's schooling, she would often be told about whether or not that person was ever seen reading or writing. Individuals, especially women, would themselves often report to Zambrano that they had no schooling; however she would later discover that they had completed two or even four years of schooling. This same occurrence was very common in Greenfield's Zinacantec Maya field-site of Nabenchauk. If presented with this contradiction, the most common explanation given to Zambrano was that they had known how to read and write when they were in school, but that they had not continued to practice those skills—that is, because they no longer practiced the school knowledge, they could not be considered (or consider themselves) to be schooled.

In the you-know-only-what-you-practice *na'* world, "doing" knowledge is what is privileged. In the terms of cognitive psychology, procedural knowledge is more highly valued than is declarative knowledge. This preference is indicated in the physicality of the Tzotzil terms for these activities: School is called *chan vun*, "learning paper," and reading is called *k'el vun*, "looking at paper" (Greenfield & Maynard, 1997). If one is not actively "looking at pa-

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per," one may be considered illiterate regardless of school experience and
previous literacy skills. *Na's* privileging of practiced knowledge results in
anomalous social research findings. For instance, the illiteracy rate reported
in the 1993 Mitontik census was higher than that indicated in the 1984
school census despite a significant rise in school participation and curricular
improvements. In a *na'* world, literacy skills and school attainment do not
have the constancy that they have in a "know" world. They can evaporate
through disuse.

FROM *NA'* TO *KNOW*: A DISCUSSION OF APPROPRIATE SETTINGS

Zambrano experienced a second, more humbling example of the *na'*
world's privileging of observable knowledge. She found that whereas women
and men with six or more years of schooling (and especially those with school-
ing-based jobs) readily recognized her Harvard credentials and went out of
their way to associate with her, all others generally considered her a nonen-
tity until she demonstrated that she knew how to behave in a locally mean-
ingful way: for example, participating in community events with well-
regarded community members, waking up earlier than others, working long
hours, or communicating in Tzotzil. Zambrano found that, even after she
had developed friendships and discussed her work, her credentials and her
reasons for being in their rural community never gained any further recogni-
tion. She was known solely for her observable acts in their local face-to-face
world.

This distinction—between the more-schooled people ready to recog-
nize the knowledge value of Zambrano's credentials and the lesser-schooled
people demanding to know her through her actions—is a useful metonym for
the contrast between *know* and *na'*. Both *na'* and *know* can be used to refer to
such things as factual knowledge, theoretical understanding, problem solv-
ing, and skills. The point of distinction, as may be evident by this point in
the chapter, is that *na's* approach to knowledge goes much beyond mental
knowledge or even that knowledge that is occasionally practiced. *Na'* re-
quires that knowledge be, at a minimum, demonstrably practiced. However,
it is those practices that are so habitual as to be characteristic of a knower-
doer that present the most irrefutable evidence that a *na'* standard of knowl-
edge has been attained.

It is not coincidental that Zambrano discovered the significance of *na'*
while researching the expansion of mass schooling into Mitontik. The dis-
tinction is between the kind of knowledge that is privileged in small face-to-
face contexts (indexed by the word *na'*) and the kind of credential-centered
knowledge that prevails in large-scale systems (indexed by the word *know*).

Unlike Zambrano's older friends in Mitontik, the little toddler who
"did not know how" to fear her at the graduation ceremony will probably not

"know how" to use *na'* when she describes others to her in the future. Zambrano later discovered the missing piece to the puzzle of the Mitontik toddler who "didn't know how to fear": namely, that the little girl's father was a schooled man with sufficient ambition to occupy the lower reaches of the government's schooling-based reward system (e.g., he has been responsible for the local *Conasupo*, a government-subsidized store, and INEA, a program to promote adult literacy). Even at one-and-a-half, he had already taught his daughter to have an eagerness for personal interaction (with a much diminished concern with family boundaries) previously rare in Mitontik children. Like the children of all of Mitontik's school teachers, Zambrano's charming graduation dinner companion presents an example of the shift away from the use of *na'*. In this particular example, to know a person could now be a one-time occasion, rather than an habitual long-term acquaintance. This shift is a useful index of how schools are transforming socialization in Mitontik. The community's primary language is still Tzotzil but more and more men and, gradually, women are gaining Spanish fluency in school, and with it, exposure to Spanish-based vocabulary, concepts, and values.

Since the 1920s, schools have contributed to increasing intracommunity variation along three axes of experience: schooling, Spanish fluency, and travel outside of the *municipio* or community. At either extreme, one finds individuals who speak in only one language register. At one end are the adults who are firmly tied to the community: *na'* expresses their life-based experience that others will act on what these people "know" and confidence that they can be "known" in that way. *What* is to be known is also very circumscribed, for as Haviland (1977, pp. 179–80) noted:

> Within the Zinacanteco universe it makes little sense to talk about rules governing these skills [male corn hoeing, accepting drink, entering a house; female tortilla-making, skirt and hair tying]. Departures from standard behavior no longer constitute behavior at all: Nonnormal action conveys no messages (except the ultimate message: "I am no longer a Zinacanteco [or a human being]"). Only when there are alternatives can behaving a certain way have meaning.

At the other extreme are people who are progressively distancing themselves from their community. Especially prominent here are the young people who have lived and studied in San Cristóbal, the regional city of Spanish colonial origins, and who would almost never speak in Tzotzil or even use the Spanish word, *saber*, with the meaning of *na'*.

In between, it may be that the use varies with the extent to which a person is vulnerable to being "knowable"—that is, vulnerable to the moral community of humbler Mitontik (discussed below). The invitations of the more-schooled and less-tied-to-Mitontik are like any one might hear at a Cambridge cocktail party: "Would you like something to drink?"

Researchers have conceptualized this type of schooling-related transformation as moving from an apprenticeship-type pattern of socialization to a more pedagogical pattern. This dichotomy was useful to Zambrano's early conceptualization of the *na'–know* distinction (Greenfield & Lave, 1982; Rogoff, 1990). It remains a good starting point for discussing how the two concepts of knowledge are socialized and how they are manifest in different kinds of learning processes.

The *apprenticeship* model, and its infancy and early childhood version known as the protective style, are based on the assumption that the developing person will learn through observation and gradual participation. The Childs and Greenfield (1980) video study of weaving apprenticeship in Zinacantán (a highland Maya community) presents a clear example of how central observation is to the acquisition of knowledge in Maya culture. Gaskins (1999) similarly highlights the importance of observation in children's everyday learning in a lowland Maya community:

> Much of a Maya child's time is spent observing the other actors in the compound. Before the age of two, a child can spend 40% of his time looking at other people and things. Between the ages of 2 and 3, as the child is becoming more engaged in the larger social world, they still focus on the observation of activities. During this period, their ability to understand events and monitor actions at a distance improves. By three, a child can usually report accurately where every member of her household is and what he or she is doing. The child often appears to be keeping sort of a running tab on compound activities through careful observation. This kind of behavior is similar to that of the adults, who are careful observers and monitor village activity in the same way. . . . Up until age 15, between 70 to 80% of the socially oriented behavior is observation, not interaction. . . .
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> To the Western eye, this looks a lot like withdrawal or a lack of engagement. But such pervasive social observation as that found in Maya children . . . actually represents a strong engagement with the world through focused observation.

Gaskins thus convincingly repeats the finding that Mayas believe that children learn best by watching. Watching exposes you to the practice of others. It is a logical form of socialization for the practice-based knowledge that is central to the Mayan *na'*.

In terms of participation, the other key facet of apprenticeship learning, Gaskins (1999) notes that Mayan children in the Yucatan Peninsula are included in adult work from an early age. She finds that Mayan parents believe that "chores help their children to grow up to be competent and motivated workers" and thus that "engaging children in adult work is responsible parenting."

In highland Chiapas, only a few hours drive from Mitontik, Maynard (2002) carried out a developmental study of child-to-child teaching in informal play groups in the Zinacantec village of Nabenchauk. Teaching, in Maynard's study, was frequently not a dyadic activity but instead a cross-age group activity involving active participation by all present. Even children as young as 4 can be seen guiding the learning of their 2-year-old siblings in the informal participatory settings that characterize apprenticeship-style learning. The level of teaching sophistication among the children guiding the apprenticeship of younger learners develops as children make social and cognitive advances from age 3 to 11.

Most important for present purposes, Maynard has found that virtually all of the cross-age play sequences in her videotaped sample involved cultural teaching and cultural learning. Unlike U.S. culture, in which each new generation is encouraged to "do their own thing," older Zinacantec children were constantly providing experiences so that their younger siblings could gain the knowledge that defines Zinacantec work and life: knowledge of washing, making tortillas, caring for babies, buying and selling. In other words, what was taught was expected habit and practice, that is, *na'*. The practice of teaching, started at such a young age, is itself an important body of habitual knowledge by adulthood. This expertise at teaching in turn leads to no-failure learning of culturally central skills such as weaving (Childs & Greenfield, 1980).

The apprenticeship model is very different from the *pedagogical* approach toward childhood as a time for play and mental learning. For children who have learned in the pedagogical model, work can come as a sudden shock to which they have not had prior practice. Pedagogically trained individuals may require additional instruction before they can perform work skills and routines—for example, short-term problem-solving strategies, additional verbal instruction, and even manual-based learning. In other words, we often learn our work through the epistemological framework of *know* rather than *na'*. In contrast, the Mayan practice of integrating children into work early on and bit by bit transforms work into habitual practice by the time it must be carried out as an adult task.

The pedagogical style has, in contrast to the apprenticeship style, been associated with mothers whose goal is to promote verbal communication (Feiring & Lewis, 1981; LeVine et al., 1991). It is characterized by distal responses, such as smile, vocalization, and gaze. In the pedagogical model, the adult or skilled person bears more responsibility for the novice's learning. Thus, an important element of this pattern is that the adult or expert stop her or his work and production to give full attention to instructing the novice.

The LeVine research in central Mexico found that the more-schooled mothers in their sample adopted a more pedagogical style of responsiveness (LeVine et al., 1991, p. 488). Similarly, research on socioeconomic status

effects on children's cognitive development in the United States has yielded associations between mother's education and an increase in distal interaction with her infant. Indeed, some studies (e.g., Feiring & Lewis, 1981) suggest that it is the ratio of distal to proximal maternal responses that produces the relationships that have long been reported between socioeconomic status and performance on cognitive measures. Namely, distal maternal responses promote the type of verbal achievement recognized in most cognitive tests.

LeVine argues that schooled women have more decontextualized language skills that allow them to interact with institutional agents such as school teachers, health professionals, and government officials. In their research with Vai (Liberian) men, Cole and Scribner (1974; also see Scribner & Cole, 1981) similarly concluded that the tasks showing the most consistent schooling effects were those requiring expository talk in contrived situations.

Maynard's developmental study also reveals how schooling affects teaching style. Maynard (2002) finds that, older Zinacantec siblings with just a few years of schooling, in comparison to their unschooled siblings, are more likely to allow their 2-year-old learners to go it alone on tasks. These older, more-schooled siblings are significantly more likely to teach from a distance that is large enough that they cannot directly participate with the learner in the task being taught. Even a few years of schooling seem to produce a more pedagogical teaching style in these Zinacantec children.

Similarly, formal education seems to move the teaching style of Mayan mothers in Guatemala in a pedagogical direction. In an informal, albeit experimental, situation with a group of children, including their own, less-schooled mothers guided the children's puzzle construction using more shared multiparty engagement (the whole group focusing on a single aspect of the puzzle); more-schooled mothers guided the children more toward division of labor in which individuals or dyads work separately on different task components (Chavajay & Rogoff, 2002). This is the style of cooperative learning seen in school contexts in the United States, a style in which each individual works independently on a piece of the whole (as in so-called "jigsaw learning"; Aronson, Blaney, Stephin, Sikes, & Snapp, 1978). In short, formal schooling is associated with a more individualistic mode of apprenticeship with greater separation of teacher from learner and learners from each other.

In conclusion, the pedagogical versus apprenticeship dichotomy is a good starting point. It is useful to consider how the universe of behaviors that characterizes the pedagogical model is an apprenticeship of sorts. For instance, it is habituating the novice to touch others proportionately more through words and consequently proportionately less through physical means. The behavior can be seen as well through seeing adults as being responsible for children (as oppose to seeing children as responsible for adults). It is particularly useful to conceive of pedagogically trained children as apprentices because their social positions are so easy to view as frivolous and completely irrelevant to the survival of their family and to work in their society. As with

all apprentices, these pedagogically trained novices will participate in the production and maintenance of the socio-cultural context into which they are apprenticing just as they participate in its disruption and change.

A person can be said to *na'* that subset of the knowledge that she or he has acquired pedagogically or inferentially that is practicable and recognized by the commentator (even if the commentary is by the individual). The following section presents a collection of epistemology-related findings as captured by researchers working in Maya communities from the 1950s to the present.

UNDERSTANDING NA' AND ITS DEVELOPMENT IN A MAYA MORAL COMMUNITY

Without *na'* as a guide, it would be difficult to see the epistemology implicit in Manuel Arias' words to anthropologist Calixta Gutieras-Holmes (1961) in the late 1950s. Arias, a leading man and shaman from the highland Maya community of Chenalhó, sought to have Gutieras-Holmes understand that "that which is learned through the mouth is forgotten; it is through the soul that we learn. The soul repeats it in the heart, not in the mind, and only then do we know what to do" (Gutieras-Holmes, 1961, p. 149).

Arias clearly privileged the knowledge that he associated with the soul, which links heart and mind. If, using the constructions presented here, *na'*-type knowledge is understood to be a reference to a person's soul (*ch'ulel*), the differentiation of *na'* from purely or principally mental knowledge becomes even more self-evident. Because *ch'ulel* or soul is also part of Maya religious beliefs, Arias introduces a moral element into knowledge.

But the moral and the pragmatic are closely linked. Thus, Zinacantecs believe that a young girl will start to weave when she has enough "soul" or "spirit" (*ch'ulel*). Spirit is necessary because weaving is so hard: frustrating, taxing, time consuming, and intellectually demanding. With soul, a girl will weave of her own volition (Haviland Devereaux, 1991). The word *na'* is always used to describe a girl who knows (or who does not know) how to weave. If a girl has enough soul, she is ready for the process of weaving apprenticeship: namely, the knowledge gained through observation and practice (what Greenfield & Lave [1982] and Rogoff [1990] have called apprenticeship-style learning). Hence, weaving in Zinacantán manifests close links between the soul, *na'* as a type of knowledge, and the apprenticeship style of learning. Without *na'*, it would be difficult to recognize the possibility that a discussion of *ch'ulel* (soul) could at once apply to both cosmology and epistemology.

Relevant to the Mayan ethnotheory of human development and socialization, soul acquisition is conceived as part of a lifelong learning process. Two decades after Manuel Arias' conversation with Calixta Gutieras-Holmes, his Princeton-educated son, Jacinto Arias (1973), asserts the same associa-

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tion between knowledge and the soul as his father before him. Jacinto Arias writes that "education is a long process that starts when a child is born and lasts until reaching the summit of his life. It is conceived of as a slow but constant acquisition, bit by bit, of the 'soul' (*ch'ulel*)" (p. 28). Eber and Rosenbaum (1998) refer to this enculturation–socialization process as "making souls arrive." The socialization process is complemented by a developmental process in which the soul is central. Arias tells Gutieras-Holmes (1961) that although a baby is said to carry its soul before it is born, it accumulates more as it "starts to laugh, to talk, and [as] its mother plays with it"; a child accumulates more soul, becomes more of a person, as she or he engages with the world. Secondly, he indicates that until the age of 7 or even 13 (but especially before the age of 3), a child is especially vulnerable to losing its *ch'ulel* (soul) because it does not yet know the waking human world (*'osil-balamil*). Again there is an explicit connection between knowledge and the soul. The younger the person, the more vulnerable she or he is to losing her or his soul. The parents must take great pains to make it remain here—they must pray for the child to have more time (her or his "hour") and make the human world more attractive by avoiding conflicts and doting on the child. They must also prevent the child from falling or otherwise becoming susceptible to having the soul leave the body (for fear of the soul passing to another realm).

De Leon (1999) describes still other routines designed to make children's souls "arrive" by imparting knowledge of the *na'* type. On the basis of her video data, she carefully describes "toughening routines that arouse angry displays and help infants develop interactive skills for managing conflict. These routines are repeated so that children can practice affect-loaded toughening interactions that strengthen the soul (*ch'ulel*). The repetitive character of this socialization process indicates that Zinacantec adults want the child to gain control of his or her emotions in a way that will, indeed, become habitual, habit being a central, defining feature of *na'*.

Child-rearing patterns in this area reflect these concerns. Maya mothers in Mitontik and elsewhere continue to carry their children in their *rebozo* (shawl draped diagonally across the torso) from birth until the next child is born, usually 2 to 2.5 years. Children must endure the rough, jerky motions of their mother's body as she scrubs clothes, kneads dough, or cleans her milpa. The comfort and nurturing response of the idle Mitontik mother may become a task-dictated response if she is engaged in work. Women joke that the child is also working in these cases, and a child may indeed be learning the rhythms of work as she or he is moved with her or his mother's body. In this sense, the participatory process of apprenticeship-style learning begins early. Anschuetz (1966) describes a traditional birth ritual that involves placing the tools of adulthood in a neonate's hand. At least symbolically, participation in work—that is, apprenticeship—seems literally to begin at birth.

Indeed, Anschuetz (1966) and Blanco and Chodorow (1964) have argued that individual life stages are defined by the work a person can perform. Eber and Rosenbaum (1998) present a clear vision of how the two discourses—child development as *ch'ulel* acquisition and child development as work apprenticeship—complement one another as a person gains *na'*. They argue that a child's soul is finally said to have "come" when she becomes a reliable contributor to her family's well-being. For instance, Luch, a Chamulan woman, tells them of the "coming" of her spirit in the following way:

> When my spirit came, I was about eleven or twelve.
> I learned to work.
> I took on spinning.
> I learned how to fluff wool,
> and then I would spin.
> I took it seriously,
> I worked well.
> It was because my spirit came.
> Because when I was little
> I just spent my time playing.
> I learned to weave well.
> I wove two white tunics for my father and my brother,
> I wove a skirt for my mother,
> I wove my own clothes.
> (as quoted in Eber and Rosenbaum, 1998, p. 15)

This lyric quote summarizes the argument we presented from the beginning of the chapter. As we argued, *na'* is not simply about learning to spin or weave, it is also about taking work seriously, working well and with spirit. That is, *na'* does not just refer to what a person "knows" but also to how she or he is "knowable" by the enveloping moral community—it is also about a person's character.

The descriptions of an apprenticeship-type enculturation presented in this section can be viewed as progressive commitments elicited and made over a lifetime in face-to-face, Maya *na'* communities. It is crucial to note that participation in a *na'* "community" need not be so enduring or the persuasion campaigns so overt.

NA' IN NON-MAYA CONTEXTS

When Zambrano began to think about *na'*, she conceptualized it as an "alternative" to pedagogical approaches to knowledge in the rural Maya context where she was conducting her research. A dichotomous approach—*na'* versus *know*, apprenticeship versus pedagogical—seemed like a good fit for analyzing the social changes associated with mass school expansion into Mitontik.

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As her analysis progressed, it became clear that this either–or approach was too simplified to accurately reflect the complex social changes associated with the expansion of the government-sponsored institutional world of roads, schools, and clinics into a previously remote rural community. Her analysis agreed with Ashcroft and colleagues' (1995, p. 4) observation that

> Critical accounts emphasising the "silencing" effect of the metropolitan forms and institutional practices . . . and the resulting forces of "hybridisation" make an important point. But they neglect the fact that for many people in post-colonial societies the pre-colonial languages and cultures . . . continue to provide the effective framework for their daily lives.

Instead of a "silencing" effect in which *know* was suppressing or even supplanting *na'* in the public discourse and in local culture, what Zambrano observed in Mitontik was an expansion of the communicative and epistemological continuum to encompass the range from *na'* to *know*.

Having witnessed the expansion of *know* into a previously *na'* context, Zambrano is now interested in pursuing the existence of *na'* forms of knowledge in *know*-dominated contexts. Just as emotional, social, and practical intelligence have recently begun to complement IQ (e.g., as a determinant of success; e.g., Goleman 1995; Grigorenko et al., 2001; Sternberg & Grigorenko, 2000), the bias of *na'* toward practiced knowledge and local responsibility balances *know*'s bias toward word-focused mental knowledge and educational credentials.

Most important, the contrast between *know* and *na'* allows us to acknowledge the cross-talk and converse representations from parents, local communities, and schools. We should especially expect critiques when the *know* world violates core beliefs. In one example, Eber and Rosenbaum (1998, p. 11) find three elements of children's experiences to be most valued in the late 20th-century Maya contexts they studied:

1. Receiving love and guidance from a large network of kin and neighbors.
2. Learning to work hard and well.
3. Feeling the abiding and tangible presence of deities in daily life.

It is crucial to recognize that these core beliefs will vary over time and will vary within any population.

Nonetheless, the Spanish word *educación,* as used by immigrants from Mexico and Central America, has a difference in meaning from its cognate, "education." In many ways, this difference parallels the difference between *know* and *na'* (Goldenberg & Gallimore, 1995). In contrast to education, *educación* puts more emphasis on heart than on head. This is true in the sense that *educación* is training for the habitual practice of correct social behavior.

Relations with a kin network are an essential aspect of *educación*. In line with the notion of cross-talk and value conflicts between home and school, Latino immigrant families complain that education takes place at the expense of *educación* in U.S. classrooms (Greenfield, Quiroz, & Raeff, 2000).

The value of the concept of *na'* is that it gives us the opportunity to not only ask "which and how much knowledge or skill?" but also "according to whom?" Whose assessments of correct social behavior are most powerful in a given context or to a particular individual? For instance, *na'*-centered analyses of appeals to *educación* may be expected to reveal conscious or unconscious attempts to stem the tide of changes in social behavior. It is important to recognize the power struggles underlying all constructions of knowledge.

COGNITIVE DEVELOPMENT AND COGNITIVE PSYCHOLOGY: *KNOW* OR *NA'*?

Relating the contrast between *know* and *na'* to the world of psychology, we submit that the word *knowledge* in the fields of cognitive development and cognitive psychology belongs in the category of *know* rather than that of *na'*. For example, Piaget's conception of knowing and knowledge belongs to *know* rather than *na'*. Our theories of cognitive development stem from *our* epistemology; they do not represent the kind of knowledge that is most important in Maya culture. The nature of our own cultural epistemology leads to particular kinds of developmental and cognitive theories, which, in turn, lead to the collection of particular kinds of empirical data. For example, Piaget's tests of conservation (1952), Vygotsky's tests of concept formation (1962), DeLoache's tests of spatial representation (1987), or information-processing tests of memory are all tests of *novel cognitive problems*, problems the child, in principle, has never seen before. In other words, *know* cares only that novel problem has been solved once; *na'* requires that it be practicably and even habitually solved and implemented. Similarly, Chi's studies of memory in the information-processing framework put the emphasis on remembering novel information. All of these theories both assume and privilege *know* rather than *na'*.

In short, a wide array of developmental theories have focused on the development and socialization of our school-based modes of knowing: the mental learning of facts for a test and the mind's construction of novel forms of knowledge. The brief discussion of the Mayan concept of *na'* that we have presented in this chapter makes it evident that the pedagogical *know* concept of knowledge is woefully narrow and inadequate to the challenge of understanding knowledge in the practical contexts of culture and competence. The concept of *na'* breaks the binds of this construction of knowledge that would recognize only academic practitioners and instead embraces a broader conception of knowledge (and thus intelligence) that presses us to

admit that the academic world produces but a small amount of the knowledge and intelligence in the world. The great complexity of this topic is that understanding knowledge in practice comprises not only the material, social, and cultural matters that motivate people to know about their world but also the knowledge-access and knowledge-making of that endeavor. It is essential that researchers develop a concept like *na'* that will permit them to recognize the knowledge and intelligence required for people to make sense of and affect each other and the dynamic world around them.

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