Introduction

The study of cultural transmission has been dominated by the view that it occurs largely through a process by which adults—especially parents—transfer what they know to children (Chipeniuk 1995:494; King 1994:111; Pelissier 1991:82; Rowell 1975:126; Schönpfug and Bilz 2009:213). However, “instructed learning” (Kruger and Tomasello 1996:377) or teaching is, in fact, quite rare in the ethnographic record (Lancy 2010). Rogoff reports of the Highland Maya that “of the 1708 observations of nine-year-olds, native observers could identify only six occasions as teaching situations” (1981:32). Bruner (1966:59), in viewing hundreds of hours of ethnographic film shot among !Kung and Netsilik foraging bands, was struck by the total absence of teaching episodes. In a very recent study of traditional ecological knowledge (TEK) in fishing communities on Buton Island, Vermonden reported that “during two years of participant observation, I rarely observed oral transmission of fishing knowledge or techniques” (2009:205). Similarly, among Yukaghir [Siberian] foragers, their “model of knowledge transferal could be described as ‘doing is learning and learning is doing’” (Willerslev 2007:162). Indeed, in numerous cases, direct instruction would be considered an infringement of the child’s autonomy and an unwarranted assertion of rank (Gray 2009:507; Hewlett et al. 2011:1172).1

Standing in contrast to the conventional view that culture is transmitted via teaching, the ethnographic record is replete with instances of children taking the initiative to learn important aspects of their culture.2 According to Esther Goody, “culture is learned less because of the pedagogical efforts of the adults than because of the predispositions, agency and intentionality of the children” (2006:11). The goal of this chapter is to review relevant materials illustrative
of children’s acquisition of their culture and to present those materials in a meaningful way. To that end, children will be viewed as active learners in: play, including make-believe and in game-play; the context of interaction with a peer group that provides supervision as well as play; the family circle or casual interaction in a family setting; and carrying out chores. Based on recent research in infant cognition, it is clear that children begin to acquire their culture quite early.

**Infant Studies**

Human infants can generally be distinguished from the young of other mammals because while their brains are large and growing rapidly, representing over half of their metabolism, they remain virtually helpless and in an immature state for a very long time. Both folk and scientific theories of infancy failed (until very recently) to wrestle with this paradox. Indeed, most would agree with the !Kung view, expressed by Nisa—the subject of a noted biography: “A child who is nursing has no awareness of things. Milk, that’s all she knows. Otherwise, she has no sense. Even when she learns to sit, she still doesn’t think about anything because her intelligence hasn’t come to her yet. Where could she be taking her thoughts from? The only thought is nursing” (Shostak 1981:113). In the last thirty years, there has been a revolution in research on infants with the invention of very clever paradigms to study what would earlier have been called an oxymoron: infant cognition (Gopnik, Meltzoff, and Kuhl 2000). Studies have established that babies have a range of hardwired capacities that aid them in making sense of the world including basic principles of physics, mathematics, biology, and psychology (Bloch, Solomon, and Carey 2001; Norenzayan and Atran 2004:151). This laundry list of capacities can also be mined for evidence of “core knowledge” systems (Carey and Spelke 1996) that function as “learning devices” (Baillargeon and Carey 2012:58). As an alternative to the empty vessel waiting patiently to be filled, evolutionarily inclined scholars posit the untutored emergence of key concepts and modules that facilitate learning about the world (MacDonald and Hershberger 2005:25).

Infants not only deploy these domain-specific modules that help them make sense of particular aspects of the world but also reveal more general abilities such as the “Goldilocks Effect,” by which seven- to eight-month-olds carefully attune their attention to stimuli that are neither too simple nor too complex “and avoid wasting cognitive resources on overly simple or overly
complex events” (Kidd, Piantadosi, and Aslin 2012). Among the infant’s suite of capacities for learning culture, “parsing” is attracting increased attention. The most obvious application for parsing is in language acquisition (Saffran, Aslin, and Newport 1996:1927), but the infant’s segmentation or parsing capacity has also been extended to the realm of physical objects (Spelke 1990:54). Infants may, moreover, be able to parse the behavior of their companions. The young seem to apply a parsing strategy to “see below the surface of behavior,’ and detect the logical organization that produced it” (Byrne 2006:494). This strategy, according to Byrne, may account for children’s evident ability to acquire complex skills via “social learning” (Bandura 1977).

In addition to decoding their physical world, babies must also be busy decoding their social world and learning their native language must be seen as the keystone of this effort (Flinn and Ward 2005:27). Flinn argues that the social world is far more challenging than the physical: “The primary mental chess game was with other intelligent hominid competitors and cooperators, not with fruits, tools, prey, or snow” (2005:74). In short, instead of a “scientist in the crib” (title of the Gopnik et al. 2000 volume), we may have a “Machiavellian in the crib” (Lancy and Grove 2010:97).

Well before language develops, studies document children’s early understanding of social relations (Callaghan et al. 2011). By three months infants can distinguish faces and familiar versus unfamiliar individuals, they can detect various facial expressions and, by five months, decode them. At seven months they discriminate between more and less emotional expressions and respond appropriately (LaFreniere 2005:192). At twelve months they attend to and follow their mothers’ gaze (Okamoto-Barth et al. 2011), beginning the “education of [the child’s] attention” (Ingold 2001:139). At a year they can respond, appropriately, with pride or shame (Trevarthen 2005). By eighteen months, infants reliably use others’ facial expressions as a guide to their own behavior, reacting appropriately to expressions showing fear, joy, or indifference (Klinnert et al. 1983). Infant cognition studies are generally supportive of the position that children take the initiative in the acquisition of culture. But, at the same time, universal aspects of culture seem designed to facilitate this process.

**Learning through Play**

An important component of the culturally constructed childcare package is play, especially within an ongoing peer group (Konner 1975:116, chapter 6,
this volume). According to the Mandinka view, “with the arrival of the next sibling, infancy (dénanola) is over. Now, play begins . . . and membership in a social group of peers is taken to be critical to . . . the forgetting of the breast to which the toddler has had free access for nearly two years or more” (Whittemore 1989:92).

With few exceptions (e.g., Fajans 1997:92), early childhood is a time for play. Parents may vary in how positively they view this activity but, at a minimum, they see its value for keeping kids busy and out of the way. Toddlers are supervised during play by explicitly delegated sib-caretakers, but they may also be confined to playing on the “mother-ground” where they can be more casually supervised by older children (Lancy 1996).

Virtually all ethnographers who have observed children at play in village settings cite a wealth of opportunities for the acquisition of culture (Schwartzman 1978). Many would also agree that play is a “form of buffered learning through which the child can make . . . step-by-step progress toward adult behavior” (Roberts and Sutton-Smith 1962:184). I have argued that learning through play is more efficient than learning from instruction for several reasons, not least because the latter is rather boring to the young while play is arousing, and because the latter “requires an investment by a second party, the teacher” (Lancy 1980a:482).

**PLAY WITH OBJECTS**

Certain forms of play occur with great regularity: object play, make-believe, and rule-governed play such as games. The object play of toddlers seems to be a continuation of the infant’s visual exploration of objects. Now the child can explore the properties of objects with its hands and its mouth, it can throw them, use them as hammers, toss them into puddles, and experiment in other ways. But, more to the point, the child will inevitably lay hands on objects that are tools. These may be rough replicas made by an older sibling (Peters 1998:90), broken or cast-off tools (Ruddle and Chesterfield 1977:34), miniatures or scaled down versions of the real thing (Hewlett et al. 2011:1174), or adult tools, which may have been “borrowed” (Odden and Rochat 2004:44).

A “tool” may be an outrigger canoe. Ifaty village in southwest Madagascar depends primarily on marine resources and a modest-sized outrigger sailing canoe is the primary means of accessing and marketing such resources. Virtually all adult males use such canoes almost daily. On the beach and in the
shallows, I observed (almost simultaneously) a two-year-old splashing alone in a tide pool, learning about water; three boys around age five clambering over a beached canoe, learning an agile dance from thwart to gunwale; two boys about age seven independently preparing and then sailing model canoes, making appropriate adjustments to sail angle and rudder; two eight-year-old boys playing with an abandoned outrigger in the shallows. They climbed on, paddled it, capsized it, and took turns as captain and mate. When two young men began to rig and prepare to launch a full-size outrigger, the two boys paddled over to watch this unfold. Shortly after the men sailed away, a boy of about ten years came paddling in to shore in a half-size canoe (Lancy 2012a:26–27). Extrapolating from more thorough studies of children learning to use canoes (Pomponio 1992:72; Wilbert 1976:318), I am confident that these experiences prepare Ifaty boys to become mariners.

As noted by Donald (1991:309) and others (Flinn 2005:78), one attribute of culture facilitating transmission is that human artifacts including tools, houses (Winzeler 2004:70–71), and villages (Strathern 1988)—the “stuff” of culture—serve as a form of “external information storage.” This point is obvious when we consider writing, books, computer programs, and the like (J. Goody 1977), but information is also embedded in the simplest artifact (Renfrew 1988). When a Bamana child plays with the characteristic short-handled hoe (Polak 2011:103), there are only so many ways it can be effectively grasped. If he uses it to pierce the soil, as he has observed his siblings doing, the number of possibilities is further reduced. Neither the grasping end of the handle nor the top side of the head makes much impression on the earth compared to the bottom edge. The proposition that human artifacts convey culture was supported by an experiment in which children aged eighteen to thirty-six months were given a range of tools of varying utility to pull a desired object within reach. Nearly all quickly eliminated the unlikely candidates and succeeded in accomplishing the task (Brown 1990:121). Of course, children at play have an almost inexhaustible reservoir of curiosity and energy to apply to the task of decoding the information embedded in objects.

The literature is replete with instances of children transitioning from scaled versions of tools to potent, usable versions as they graduate, seamlessly, from play-working to working (Lancy 2012a; Crittenden, chapter 7, this volume). Perhaps the most persuasive evidence regarding the attitude of adults toward children acquiring culture through play, without the need for adult guidance, comes from widespread reports of parents’ indifference to and even
encouragement of toddlers playing with machetes and other sharp and dangerous tools (Lepowsky 1987:79; Little 2011:51; Marlowe 2010:198; Ochs and Izquierdo 2009:395; Whiting 1941:25). By indulging children’s curiosity about their environment and the things in it, parents ensure that children learn useful information without the necessity of instructing them.

MAKE-BELIEVE PLAY

In “Becoming a Blacksmith in Gbarngasuakwelle,” I described Kpelle children’s amazingly detailed and faithful replication of the blacksmith’s forge in an episode of make-believe (Lancy 1980b). It is impossible to say whether the boy who scripted the play and took the lead will actually become a blacksmith although, in studies of apprenticeship, such evidence of early interest is sometimes cited in accounting for the decision to place a child with a master craftsman (Lancy 2012b). This level of verisimilitude and the effort invested has been recorded in other societies such as Katz’s account of Sudanese boys carefully replicating their farming systems in great detail (C. Katz 1986:47–48).

Ethnographic descriptions of make-believe play are rich and varied. Esther Goody (1992) describes a continuum from make-believe to “for real” food preparation in which older children model for younger ones, real but scaled-down pots may substitute for toy pots, and, if mother is willing, edible ingredients go into the pot rather than grass. Franz Boas describes Baffin Inuit boys “play-hunting” for seal using miniature harpoons fashioned by their parents (1901:111). While the everyday work activities of adults provide a common theme, we also see children mimic the processes involved in carrying out trance-induced shamanism (R. Katz 1981), simulated marriage including copulation (Gorer 1967:310), and religious rituals (Fortes 1970:68).

Parents are generally supportive of children’s learning through make-believe as evidenced by the widespread practice of donating appropriate objects and materials as props (Laguna 1965:14; Grindal 1972:29; Hewlett et al. 2011:1175). For example, “[Inuit] girls make dolls out of scraps of skin, and clothe them like real men and women. Their mothers encourage them, for it is in this way that they learn to sew and cut out patterns” (Jenness 1922:219).

The public nature of most adult activity facilitates children’s engagement at a safe distance where they cannot interfere (Lancy 2014:180). Anthropologists often note adult awareness and sympathy toward children’s mimicry: “When adults are asked about children’s mimetic play they reply: ‘That is
how they learn’” (Fortes 1970:23). “Biyaka parents [say] the primary duty of young children is to play. In fact [if] children do not play, they will fail to learn anything” (Neuwelt-Truntzer 1981:106). This presumption on the part of both anthropologists and parents was supported in a series of empirical tests carried out among several groups in Botswana (Bock 2002, 2004; Bock and Johnson 2004).

The idea that make-believe play may have an important role in children’s acquisition of culture—Barber calls it “vocational kindergarten” (1994:85)—has also received theoretical support. The importance of children acquiring useful skills from those older and more expert via imitation is widely acknowledged. “We are such a thorough-going cultural species that it pays children, as a kind of default strategy, to copy willy-nilly much of the behavioral repertoire they see enacted before them” (Hopper, Marshall-Pescini, and Whiten 2012:105). Children’s make-believe may closely replicate the scenes of village life but does not do so slavishly. There is invention in the roles assigned, in the props used, in the script followed, and, importantly, children may “twist” the tale. That is, we have a limited number of examples of children behaving like young social critics in their sometimes ribald and irreverent portrayals of adults (Goldman 1998; Gregor 1988:113; Hogbin 1970:138). Fortes notes “the Tale child’s play mimesis is never simple and mechanical reproduction; it is always imaginative construction based on the themes of adult life” (1970:475). Crittenden (chapter 7, this volume) records a type of foraging invented by Hadza youth that does not replicate any specific adult practice. She also makes clear that the successful harvest of Weaver bird fledglings, while effectively providing calories for the group, is conducted entirely in a spirit of play.

Gamesmanship

Like make-believe play, games are also ubiquitous cross-culturally and anthropologists have long speculated that core cultural values are transmitted to the young through games (Roberts, Arth, and Bush 1959). Within-culture studies illustrate this link between aspects of play and cultural values. Marquesan (but true broadly in Polynesia) children’s awareness of social rank leads them to avoid play requiring leaders or lengthy negotiation of rules or roles (Martini 1994:80). In small-scale, band societies, the play group—necessarily of mixed ages—must allow all players, no matter how inept, to participate so the playing field is always level, thereby supporting the prevailing egalitarian ethos
(Lancy 1984). Among the Tangu of Papua New Guinea, teams of children play a game called taketak. Taketak is designed, in keeping with local values, to end in a tie (Burridge 1957). Aymara boys in the Andes play marbles (girls play jacks) while herding their flocks far from the village. Benjamin Smith’s (2010) careful description of these games complements his in-depth analyses of speech and social interaction patterns during play. He illuminates the importance of bad luck (qhincha) in marbles. By confronting and enduring qhincha in the game, boys successfully fend off accusations of being feminine or homosexual. By implication, a boy who keeps his cool when something goes wrong (a pebble in the path deflecting his shot, a toddler tramping through the play area) demonstrates “chacha-ness” or “toughness”—the essence of masculinity. In the Brazilian rainforest where, until recently, intergroup warfare was endemic, Xavante boys’ games/sports extract and ritualize many aspects of fighting (Gosso et al. 2005:232). In contrast, in Semai farming villages in Malaysia, children rarely see aggression.

For example, “two children . . . put their hands on each other’s shoulders and wrestle, giggling, but never quite knocking each other over . . . [and] pairs of children in the two- to twelve-year age range flail at each other with sticks, but stop just before hitting each other” (Fry 2005:68).

One prominent perspective on games has been that they provide opportunities to contest one’s rank in the dominance hierarchy (Weisfeld 1999:55). For example, “among [Pashtu] nomad boys . . . whenever a new household pitched their tent . . . boy(s) of the new household were invited to wrestle, and very soon, everybody knew the position of the new boy(s) in the rank order of the peer group” (Casimir 2010:50). However, a more general utility of games lies in what I call “gamesmanship” (Lancy 2014:224–228; Lancy and Grove 2011b:491–492). If the growth of the human brain has been driven by the need to adapt and survive within fairly large social groups, successful individuals will be those who act Machiavellian: maintaining social ties to (and benefitting from) the group while also taking advantage of group members to gain disproportionate resources including mating opportunities. “Their manipulations might as easily involve co-operation as conflict, [and] sharing as hoarding” (Byrne 1995:196).

Extrapolating from this argument, if children have social brains that need to be exercised to fully develop, games should be the perfect mental gym. The key elements of the game experience are rule-governed play, flexibility
in applying the rules, and an absence of adult umpires. That is, children must be free to construct successful gaming sessions without adult interference (in contrast to contemporary Little League baseball; see Fine 1987). In this way rules can be bent, for example, to lower the threshold for participation by younger or less able players, or renegotiated so that play can continue even if one player wins consistently. A common strategy is to “self-handicap” (Boulton and Smith 1992:436). Plentiful opportunities of this sort will nurture children’s gamesmanship or the ability to negotiate the complex social world faced by adults.

**Learning in the Peer Group**

In the previous section I noted the case of the Mandinka, where mothers strongly encourage toddlers to forget the breast, in essence shooing toddlers away to join the playgroup. This pattern of behavior is so common that it has a name: “toddler rejection” (Weisner and Gallimore 1977:176). It is an obvious complement to weaning in that, when infants are weaned relatively early, their displeasure can lead to an escalating battle where others—grandmothers and older siblings particularly—come to the mother’s aid (Leavitt 1989:147; Gallimore, Howard, and Jordan 1969:393; Meehan, Helfrecht, and Malcom, chapter 9, this volume). Across the primate order, juvenile females show great interest in infants (Hrdy 1999b:157, chapter 2, this volume) and it is not hard to sustain an argument that their supervised interaction with younger siblings prepares children for the task of parenthood (Fairbanks 1990; Riesman 1992:111). The weanling’s need for mothering corresponds to the alloparent’s need to mother. In the process of becoming initiated into the peer group, the toddler must shape up or suffer the consequences. The toddler must “fit in.” Teasing, pranks, and other forms of correction are to be expected (Broch 1990:81) except where parents exercise close oversight (Gaskins, Haight, and Lancy 2007). This is a familiar scene to those studying childhood in small-scale face-to-face communities:

*When [Hadza] children are one to three years of age, they often throw tantrums, during which they may pick up a branch and repeatedly whack people over the head. The parents and other adults merely fend off the blows by covering their heads, laughing all the time. They do not even*
take the stick away. When the child hits another child who is a little older, however, that child often grabs the stick and hits the little one back. This is the way young children learn they cannot get their way; older children train them. Thus, it is not necessary for adults to discipline them. [Marlowe 2010:197]

Excepting the Aka and other pygmy groups (Hewlett et al. 2011:1172), children are far more likely to be in the company of peers than parents. Weisner argues that “children care for other children [under a mother’s or other adults’ management] within indirect chains of support” (1996b:308, emphasis added; see also Rogoff 1981:31). Toddlers are managed by slightly older siblings who are, in turn, guided by adolescents. Adults, meanwhile, serve as rather distant “foremen” for activities. This phenomenon is illustrated in Bogin’s portrait of a multi-generational gathering of Kaqchikel-speaking Maya women (Bogin 2013:37, chapter 3, this volume).

Children consigned to the company of older siblings and their friends join a cadre of excellent role models: “Mayan toddlers learn primarily by observing and interacting with their sibling caretakers” (Maynard 2002:978). Older siblings supervise and instruct by example whether engaged in foraging (Bird and Bird 2005:135; Rohner and Chaki-Sircar 1988:33), planting (Polak 2003, 2011), or personal grooming (Martini and Kirkpatrick 1992:124). Siblings can be more patient and sympathetic teachers than adults (Maynard and Tovote 2010). A contrasting pair of anecdotes is illustrative. Raum observed a Chaga mother and her little daughter cutting grass to take home to feed the cattle. Tying the stalks into a bundle is difficult but the “mother refuses requests for help by saying: ‘Haven’t you got hands like me?’” (Raum 1940:199). Now consider a vignette of Pushtun children gathering and bundling shrubs (buti) to bring home:

Khodaydad ... showed and explained to his younger brother Walidad ... how to put [shrubs] (buti) together: He made up a small pile while Walidad squatted next to him and watched. Tying them together, he explained how to do it. Then he untied the bundle and bound it up again to show how it was done. Walidad then wanted to carry it home. His elder brother helped him shoulder it and his sister guided him home, and it was obvious that little Walidad was very proud of being able to accomplish the work. [Casimir 2010:54]
What Motivates Culture Acquisition?

Walidad’s pride in his accomplishment is consistent with an early and enduring theory of child development. White proposed that, from birth, humans are motivated to act on the environment in every way open to them in order to develop competence. Humans find such mastery rewarding and experience a “feeling of efficacy” (R. White 1959:329). According to Weisfeld and Linkey, this drive transitions at age three or four into a more general motive to “strive for success” (1985:110). They argue that even the young are able to translate practical accomplishments, such as successful foraging or carrying home some firewood, into social capital. A great deal of what one needs to master can be learned through observing and emulating conspecifics.

Humans share with most primates the ability to learn from others even when the models are not intending to demonstrate or instruct. It is patently less costly for an individual to observe and attempt to replicate the proficient behavior of an expert than to operate in a social vacuum or to “learn individually” (Richerson and Boyd 1992:70). But, aside from offering a pathway to competence, imitation is also the highest form of flattery (Henrich and Gil-White 2001:167). The child who tracks and attempts to replicate the purposeful behavior of others is appreciated by them and by others (Balikci 1970:45; Barlow 2001:86; Fortes 1970:22; Rival 2002:116; Wenger 1989:93). Outright praise for children’s work efforts is not common, so children’s “rewards” are instead subtle signs of fitting in such as being fed regularly and tolerated in adult company.

Reviewing these various “drives” across a spectrum from psychology to primatology might seem like the proverbial five blind men describing an elephant. To summarize, it seems to me that children learning their culture are demonstrating at least two powerful drives: to acquire the skills to survive and to affiliate securely with a group. It is likely that, in evolutionary terms, the latter drive appeared more recently (Boyd and Richerson 2006:469). Happily for the child, culture is organized into “routines” that facilitate these goals (Lancy 1996:2). We now consider cases in which the twin drives are quite evident as children attempt to “fit in.”

Fitting in to the Family Circle

In a pattern that must be very old, humans conduct their business in a public setting with multiple participants and onlookers including, especially, children.
Numerous studies of the stone scatter from sites where stone tool production occurred show incomplete tools and debris consistent with a mixture of skill levels, including beginners (Dugstad 2008:70; Pigeot 1990:131). At two sites in France, “highly skilled knappers occupied places closest to the hearth, the less skilled knappers and the novices sat further back from it” (Shennan and Steele 1999:375). Contemporary Iban children observe their parents working in the fields from an early age and “both boys and girls begin to join in tasks which lie within their powers, and soon come to make valuable contributions to the working of the family farm” (Freeman 1970:231–232). Ingold defines the essence of this dynamic as the “education of attention” (2001:139). This idea applies to most primates since juveniles remain in proximity to foraging adults who, unwittingly, draw “the juvenile’s attention to a specific object or location in the environment that it otherwise would not have noticed” (Tomasello, Kruger, and Ratner 1993:496). Ingold continues: “In the passage of human generations, each one contributes to the knowledgeability of the next . . . by setting up, through their activities, the environmental contexts within which successors develop their own . . . skills” (2001:142).

Here follows a small sample of cases illustrating the atmosphere of one such environment—the family circle (for other good examples, see Ainsworth 1967:12; Laguna 1965:15; J. Campbell 1964:157; Fortes 1970:37; Philips 1972:385).

[Matsigenka] infants and young children are embedded in the middle of quotidian activities where they are positioned to quietly observe and learn what others are doing. [Ochs and Izquierdo 2009:395]

At the age of three he chooses his own place at the [Wolof] family meal, and here he is encouraged to acquire social norms. [Zemplenien-Rabain 1973:222]

[Biyaka] children . . . have almost ubiquitous opportunity for observational learning of adult subsistence behaviors. Furthermore, “watching” . . . was a very high-frequency activity across all age groups. [Neuwelt-Truntzer 1981:109]

As social learners, children require models and most theories of culture transmission accord special status to parents and other family members. Zafmaniry believe that “children come to resemble their parents, in great part,
because of the house they grew up in, the environment in which they live, and the people with whom they have interacted” (Bloch, Solomon, and Carey 2001:50; see also Euler, Hoier, and Rohde 2009:85). From the ethnographic record, we learn that girls are far more likely to attach to their mothers as social learners than boys are to their fathers. Among the reasons for this gender bias is that tasks tend to be gender specific. Girls, because of their service as “helpers-at-the-nest” (Crognier, Baail, and Hilali 2001) remain firmly in their mother’s orbit as they mature, whereas boys are usually free to roam more widely (Lancy and Grove 2011a:288). Parallel relationships between boys and their fathers are more rare. In pastoral societies, boys herd solo or with other boys. Among hunters, boys are likely to be excluded from their father’s hunting forays because of the danger, their slower travel and their inability to remain silent (Reyes-Garcia et al 2013:208). Even in cases in which the father has a skill set that he would like to see transmitted to his son, he will find another male to whom his son can apprentice because he cannot bear to administer the necessary punishment that learning is presumed to require (Ames 1973:153; Lancy 2012b:117). And, as the child grows older and moves out into the community at large, new role models become available (Aunger 2000:471; McElreath and Strimling 2008:307; Tehrani and Collard 2009).

Many societies negatively sanction children who are “forward” and ask questions or offer opinions to adults (Bledsoe 1992:192; Lancy and Grove 2011a:285; Paradise and Rogoff 2009:121), but, on the other hand, children are expected to attend to “subtle, low cost teaching” (Kline, Boyd, and Henrich 2013). For example, León (2012; see also J. Campbell 1964:157; Silva, Correa-Chávez, and Rogoff 2011) describes the “overhearer” as one of the cornerstones of traditional Zinacantecan child-rearing. Older family members critically discuss the child’s behavior when the child is present but not otherwise interacting with them. The child, who is expected at all times to pay attention to those older, is expected to listen to these discussions and reflect upon his or her actions. Less subtle but quite common means of shaping children’s behavior (Lancy 2014:193–198) include the use of scare tactics (Gorer 1967:312; Hernandez 1941:130; Leavitt 1989:150; T. Williams 1969:94, 114) and corporal punishment (Borofsky 1987:97; Freeman 1983:206; Musil 1928:256; Shelton 1998:31).

These subtle and not-so-subtle messages to very young children are often designed to socialize the child to broad cultural expectations. For example, Papel infants are given something desirable, such as a snack, then
immediately told to pass it on to another, particularly a sibling (Einarsdottir 2004:94). The Kwara’ae also do this and “infants who cry or resist sharing are gently chided, teased, or laughed at, and told to share because ‘he or she is your older or younger sibling’” (Watson-Gegeo and Gegeo 1989:61). There is no suggestion that children will not learn the appropriate prosocial behaviors with time (d’Andrade 1984:97; Fehr, Bernhard, and Rockenbach 2008; Rheingold 1982:114; Warneken and Tomasello 2006:1301). After all, the success of the species has rested on voluntary compliance with social norms (Boyd and Richerson 2006:469). Characteristically, in societies explicitly promoting prosocial behavior, the child is encouraged to behave “correctly” vis-à-vis the very individuals—older siblings, grandmothers, and other close kin—who are also likely recruits to serve as substitute caretakers (Weisner and Gallimore 1977).

Still within the family circle, the child matures into a “legitimate peripheral participant” (Lave and Wenger 1991) who “pitch[es] in” and helps with ongoing activity such as food preparation, crafts, and housework as soon as he or she can do so without damaging resources or interfering with those who are more productive (Krause 1985:95). Children can expect some attention from family members as long as they are focused on a task (Weisner 1989:78). “[Mazahua] children participate in . . . family . . . activities [and] conversation and questions . . . occur for the sake of sharing necessary information . . . integral to the endeavor at hand” (Paradise and Rogoff 2009:118). Indeed, scholars have advanced the idea that merely by approving or disapproving of children’s early attempts, older family members can dramatically improve their efficiency as social learners (Castro and Toro 2004). The general philosophy might be that “an individual does not learn from another but through another” (Schönpflug 2009:466).

One of the better-described elements of childhood is children’s work. I think one reason for this is that anthropologists are often shocked by the sight of very young children carrying out vital work for the family. Margaret Mead offered one of the earliest descriptions of a phenomenon often recorded since:

[On Samoa] the tiniest little staggerer has tasks to perform—to carry water, to borrow fire brands, to fetch leaves to stuff the pig. . . . Learning to run errands tactfully is one of the first lessons of childhood. [1928:633]

In spite of her use of the term “lessons,” these undertakings are typically initiated by the child: the “assumption of work and responsibility comes about
gradually, and largely on the child’s own initiative” (Edel 1966:178). Mayan children “are eager to participate in the economic activities of the household” (Rogoff 1981:31). The “family circle” can be set in motion as family clusters go on foraging expeditions. Among the Cree,

as soon as a Cree child learned to walk, she was expected to help with and share in the work of the bush camp. The child was not usually given verbal instruction but encouraged to learn skills by playing and by imitating adults through participation in subsistence production activities. . . . [She] was told, “Keep trying, never give up until you get it right.” . . . When she did it properly, the teacher praised her saying that is the way (“ekute”). [Ohmagari and Berkes 1997:206]

The extraordinary capacity of the very young for social learning is exercised to its fullest extent in the family circle. Children can create a kind of mental Rolodex of the behavior and needs of other family members. They can create a blueprint of activities within the domestic sphere, fitting themselves into the flow of events, and attempting to help out or mimic the actions of those older “as if” they were helping out.

**From Making Nice to Making a Contribution**

Ideally, children’s desire to be helpful and their level of competence, like gear wheels, mesh with the needs of the family. Two areas where this intricate process is readily observed, even among the very young, are in the relationship between a sib-caretaker and her baby sibling and in the task of errand running. As I have discussed elsewhere (Lancy 2012a), one robust feature of the chore curriculum is its “staged” character. That is, realms of work are usually partitioned in a way allowing the child to move smoothly from rudimentary participation to competence.

A survey of the Human Relations Area Files (HRAF) archive found that, in 186 accounts of childcare, 40 percent of infants and 80 percent of toddlers were cared for primarily by someone other than their mother, most commonly older sisters (Weisner and Gallimore 1977:170). A three-year-old will seek to hold her newborn brother and be permitted to do so, usually under supervision, for short periods (Ottenberg 1968:80). As the two grow older, she will become responsible for longer periods of care and meet a wider array
of needs including dressing, feeding, delousing, and, above all, entertaining (Rindstedt and Aronsson 2003:8). Failure will be noted and chastised (Schlegel 1973:454). At seven, we might find her caring for several children, out of sight of their mother, perhaps taking them to a pond to bath them and clean off any urine or excrement (Rohner and Chaki-Sircar 1988:70–1). At nine she could be simultaneously tending her charges and foraging for edibles that she will share with them, thereby meeting a significant portion of her own and their caloric needs (Crittenden et al., 2013). Years later, she may be “proudly possessive of the achievements and exploits of younger brothers and sisters who had been [her] special responsibility” (Elmendorf 1976:94).

The first chore for boys will probably be errand running. A barely mobile toddler may be asked to carry a cup from its mother across an evening family circle to its father. The same toddler will tag along as an older sibling makes a longer delivery excursion, in effect serving as an understudy. Later, “between eighteen and thirty months of age . . . the Guara child begins to act independently as a messenger” (Ruddle and Chesterfield 1977:31). “Very young children (age three) may start with one or two sticks of wood, or yams in a carry net, but by age eight they are carrying firewood, water, produce, and messages” (Zeller 1987:544). Errands vary in length and territory (Nerlove et al., 1974:276), can involve either close kin or strangers, can involve loads of varying size and fragility, and can include an exchange of some kind including a market transaction. Adults match their assignments to the child’s level of skill and size and each new assignment ratifies (and motivates) the child’s growing competence (Lancy 1996:146).

A second case illustrating the graded nature of the chore curriculum comes from Polak’s meticulous description and analysis of the education of Bama bean farmers. Note that at every age level mentioned in the quotation, the “task” is somewhat different. Just as an array of siblings going off to fetch water from the stream are given appropriately sized vessels (Lancy 1996:144), bean farming can be partitioned to match the skill and endurance levels of the worker-learners:

[At harvest] three-year-old Daole . . . begins to pluck beans from the tendrils. After he has filled the lid with a handful of beans, his interest fades. [He] carelessly leaves the lid with the beans lying on the ground and goes looking for some other occupation. . . . Five-year-old Sumélà . . . looks out for a corner not yet harvested and picks as many beans as
will fill his calabash. . . . [He] keeps on doing this for more than one and a half hours. . . . Eleven-year-old Fase has been busy harvesting beans . . . since morning. He works as fast as . . . his father and grown-up brother . . . and only takes a rest when they [do]. . . . Fase . . . even takes on the role of supervising his younger brothers and checks their performance from time to time. [Polak 2003:130–132]

We learn from Polak's (2011:104–105) work that children are given worn hoes to practice with and, while hoeing, that they are gently nudged by older siblings to work an area not already cultivated to avoid damaging the work of others.

We have considerable evidence (Piel 2012) that children are “natural foragers” with a strong tendency to learn about their natural environment “even in the absence of adult instigation or favorable environments” (Chipeniuk 1995:494; see also Barrett 2005:217). Hunting can be more challenging (MacDonald 2007:391) than bean farming but the acquisition process is similar. Older siblings again serve as models. A boy is not typically permitted to accompany adults on the hunt until he is in his teens and fairly proficient (Peters 1998:90–91; Puri 2005:233–234). There is graduated movement (Goodwin and Goodwin 1942:475) from toy to child-scaled to full-size weapons, or from slingshot to spear to blowgun. Boys roam playfully but purposefully through the forest and savannah with peers, gradually learning to read the “signs . . . of bent leaves, twigs, and shrubs that the Ache call a kuere . . . [enabling them to undertake] hunting forays without getting lost” (Hill and Hurtado 1996:223). As the nascent hunter becomes more proficient, more serious, and less playful, his catch may range from grasshoppers to birds to rodents to a “real” kill (Turnbull 1965:257) that can be proudly shared with the family. Full proficiency may not occur until the hunter is in his third decade.

In earlier surveys (Lancy 2012a, b, 2014; Lancy and Grove 2010) we have reviewed dozens of cases across the entire spectrum of skills from subsistence to crafts. All incorporate this staged quality, usually with a play stage at the outset (Lancy 2012a). There are, of course, exceptional circumstances when a stage is missing. That is, the step up from one level of skill to the next is too great for the child to manage and an adult will intervene to show the child how to circumvent this roadblock. Bamana boys, for example, master the tasks of farming largely on their own but encounter one distinct challenge in planting millet seeds. They must in one fluid motion open a hole in the soil with their
hoe, tilt a gourd filled with seed attached to their wrist just enough to deposit two or three seeds in the hole, and then cover up the hole again. Adults explicitly demonstrate this process for boys who have been unsuccessful (Polak 2011:85).

**Underlying Processes in Skill Acquisition**

Children take advantage of opportunities to observe and emulate the more competent in order to achieve competence and to be helpful and accepted. They bring innate gifts to this process as discussed earlier. At around four to six years of age children begin to display something called Theory of Mind (TOM) (Wellman, Cross, and Watson 2001). TOM allows an individual to get inside the head of another person. The child can now read others’ intentions and can construct the others’ trajectory and goals. The terms “intersubjectivity” and “perspective taking” are also applied in discussions of this phenomenon (Tomasello, Kruger, and Ratner 1993). Anthropologists have noted such a concept in a number of parental ethnotheories. The child has reached a point in their development where they start to “get noticed” (Lancy and Grove 2011a) due to their evident intelligence or common sense, referred to among the Kipsigis as ng’omnotet, among the Ayoreo as aiuketaotiguei, the Sisala as wijima, and the Ifaluk Islanders as repiy, to name a few examples (Lancy 2012a:34). Many of the qualities attached to folk definitions of sense or intelligence suggest that the child is now much better at perspective taking and can better anticipate another’s intentions and desires. The child contributes appropriately without bidding or guidance (Lancy 2014:200).

Isolated studies indicate that humans are capable of extraordinary feats of navigation without instruments. Examples include ocean navigation in the Carolines (Gladwin 1970) and long-distance herding of reindeer in Siberia (Istomin and Dwyer 2009). Studies of child navigators are rare but Ache (Hill and Hurtado 1996:223), Kpelle (Lancy 1996:156), Tzeltal Maya (Zarger and Stepp 2004), and Zapotec (Hunn 2002:610) children have all demonstrated what to the ethnographer seemed extraordinary talent in navigating a thickly forested environment to forage. The forager’s ability to take in and process information from the environment suggests an unlearned capacity for what Gaskins and Paradise call “open attention” (2010:104), which can be deployed to good effect in social settings as well as in the natural environment. Hilger (1957:50) was impressed by Araucanian children’s keen eyesight, hearing, and
powers of observation. Yukaghir hunters insist that, while you can learn by observing others, to become a really proficient hunter you must hunt on your own: “Only then do you really start noticing the myriad of details around you” (Willerslev 2007:169).

Gaskins and Paradise (2010:99–100) describe open attention as wide-angled and abiding. The first means that the individual is aware of and attends to a great deal of the environment at one time rather than attending to only one stimulus such as the teacher. The second means that attention is sustained rather than episodic or short-term. They cite a study, which found that children and adults from the WEIRD (Western, Educated, Industrialized, Rich and Democratic; see Henrich, Heine, and Norenzayan 2010b) society displayed short, fleeting attention whereas Mayan mothers and children displayed open attention (Chavajay and Rogoff 1999; see also Silva, Correa-Chavéz, and Rogoff 2011). It may well be that open attention is subject to a critical period during which, if it is not exercised (because, for example, WEIRD parents spend so much time focusing the infant’s or child’s attention on them as a teacher or on educational toys), it will be extinguished.

The Economic Value of Children’s Work

Another issue that concerns us is the child’s level of productivity as a function of age. As children become older they gain both knowledge and strength. Bock carried out systematic measurements of production as a function of strength and skill in several groups in Botswana. For some tasks, experience is the best predictor of proficiency; for others, strength is critical. Processing baobab fruits requires neither great strength nor skill and can be undertaken by four-year-olds. Mongongo nut processing requires both, and Bock (2002) finds that the most proficient women are twenty-five to fifty-five years old. Researchers have also looked at this question among Tsimané hunters (Gurven, Kaplan, and Gutierrez 2006).

A related factor is demand. How productive the child is will depend in part on the expectations of family for assistance. Karen Kramer (2005b:135) compared gross levels of productivity as a function of age among Mayan farming children and their counterparts in two South American foraging groups. The Mayan children reached an equilibrium of producing as much as they consumed by thirteen, whereas foraging children took five to ten years longer. The nature of subsistence plays a role. Hewlett and colleagues’ (2011) long-term
study of the Central African Aka foragers and Ngandu farmers illustrates this well. Ngandu children are expected to contribute to the domestic economy from an early age and they are able to do this, in part, because the skills they will need are readily learned by the onset of adolescence. Ngandu subsistence relies heavily on children’s desire to be compliant, less on their desire to achieve. This pattern is very typical in farming and herding communities (Hames and Draper 2004:334). By contrast, the Aka—like the !Kung but unlike another pygmy band, the Biyaka (Neuwelt-Truntzer 1981:138,147)—do not expect children to contribute greatly to the domestic economy. Nevertheless, by age ten, both boys and girls have mastered a large repertoire of sometimes-complex foraging skills: “If need be . . . Aka ten-year-olds have the skills to make a living in the forest” (Hewlett and Cavalli-Sforza 1986:930). Learning to make a living, for Aka children, seems to be less driven by the need to conform to family requirements than by the desire to achieve competence.

This gap between the age at which children achieve adequate levels of competence in the local subsistence system and, separately, the age at which they achieve significant production levels has theoretical significance. Many evolutionary theorists consider the prolonged period of semi-dependency and the long-delayed onset of puberty and mating as providing a sheltered learning environment. They reason that the human adaptive model requires the gradual acquisition of an entire array of increasingly more challenging skills (Kaplan et al. 2000:156). However, there have been a rapidly accumulating series of studies (Lancy 2014:278–280), of child foragers in particular, showing what we might call precocity in learning to forage (Crittenden, chapter 7, this volume). These studies include young Martu children hunting and surviving on goanna lizards (Bird and Bird 2005), Hadza four-year-olds gathering and eating quantities of baobab fruits (Blurton-Jones, Hawkes, and O’Connell 1997), six-year-old reef foragers on Mer Island achieving full proficiency (Bird and Bird 2002), Zapotec children having a “precocious” command of ethnobotany (Hunn 2002), young Ache female foragers matching adult women’s foraging returns by the age of ten to twelve (Hill and Hurtado 1996:223), Samoan ten-year-olds fishing successfully using a variety of methods (Odden and Rochat 2004:45), !Kung boys being considered successful hunters and being feted for bagging their first large mammal at least ten years before they marry (Shostak 1981:84), and Kutenai boys being able at age ten to bring down a bison calf with bow and arrow (Turney-High 1978:117). These studies cast considerable doubt on the necessity of a lengthened childhood to learn subsistence skills
We should also take note of the fact that while humans take many years to reach physical maturity, brain growth—critical for learning one’s culture—is essentially complete by age seven (Bogin 1999b:130; Bogin, Bragg, and Kuzawa, chapter 3, this volume).

I believe that the solution to this apparent paradox lies in the elastic nature of human ontogeny (Bernstein, Sterner, and Wildman 2012:398; Bernstein, chapter 5, this volume). It is very clear from the literature, as just discussed, that children can acquire subsistence skills quite early. It is also the case that their application of those skills in a significant way to support themselves and close kin may occur early or very late in childhood (Kramer and Greaves 2011:308). Under adverse circumstances, such as the death of a parent (Polak 2011:142; Sugiyama and Chacon 2005:237); a drastic change in the food supply; the loss of males from the community to distant opportunities like trade, warfare, herding, and hunting or fishing; unstable or unsupportive family; or the arrival of a new baby, children “can ratchet up their productivity quickly and execute efficiently those skills they’ve been perfecting through playful work” (Lancy 2014:280). Kin selection theory might also suggest that the child will increase production in order to aid and maintain his or her family. The family has nurtured the child in the past and may well aid his or her survival and reproductive efforts in the future. Piel (2012) has documented an extraordinary example of this in the behavior of rural and urban Japanese children during and after WWII. They taught themselves and their younger siblings how to forage for foodstuffs (acorns, nuts, aquatic plants, and shellfish) to provision their families and forestall starvation. An alternative to provisioning self and kin may be to accelerate the process of mating and family formation, reproducing early and often (Belsky, Steinberg, and Draper 1991:507; Giudice and Belsky 2011). Lastly, it is likely that Pleistocene foragers enjoyed much better nutrition than contemporary hunter-gathers. The juvenile period may have been shorter (Blurton-Jones 2006:252), giving children a greater incentive to capitalize on their skill set at an earlier age.

**Conclusion**

I have endeavored to weave together various strands of evidence to make a case for children learning their culture via informal processes, largely at their own pace and initiative. Children bring a suite of innate tools to the process of culture acquisition. Recent studies of infant cognition have revealed a
repertoire of emergent capacities for making sense of and interacting with the physical and social world. Older children reveal additional capacities for learning including abilities to carefully observe others and the physical environment. These capacities facilitate the “precocious” acquisition of environmental information and subsistence skills.

Even very young children display a willingness to “help out,” “fit in,” and receive approval (Hrdy, chapter 2, this volume). The child’s eagerness to interact with others facilitates language acquisition, which then enables social learning. Another “drive” appears to be the need to emulate the skills of those more expert. This tendency is encouraged by, for example, giving toddlers sharp knives to practice with. Those older and more expert serve as role models, not always willingly. They may adjust their behavior in response to cues provided by the learner (Thornton and Raihani 2008:1826). The child’s elders may use subtle hints to shape behavior or more forceful strategies such as threats or punishment. Many societies accelerate the timetable for children to acquire prosocial patterns of behavior and speech. Still, intensive, direct verbal instruction is quite rare and the construction of lessons where the practice is reorganized completely to optimize learning rather than production is almost unheard of.

Important arenas for children’s acquisition of culture include several kinds of play including make-believe and games, participating as an observer at family gatherings, helping with household tasks, carrying out chores, and engaging in various activities with peers. Children emulate those slightly older and more expert, generally learn at their own pace, and gradually climb a ladder of mastery from rudimentary elements of the larger task (whether play, work, or social role) to acknowledged expertise and the supervision of younger participants. Children’s acquisition of culture may be overlooked because they may be thought of as lacking “sense” and/or because they may not be called on to make significant contributions to the family. However, these latent talents may be called upon in a time of crisis when children can ratchet up their productivity. While we might conventionally think of childhood as a period of dependency on others, that period can be significantly shortened as the need arises.

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Notes

1. This pervasive attitude toward children’s acquisition of culture has implications for cultural devolution. Village practitioners don’t necessarily feel obligated to assume a more active teaching posture when the young fail to take the initiative to learn from them and the skills are lost (Friedl 1997:4; S. Howell 1988:162).

2. Space limitations preclude any consideration of culture acquisition during adolescence but see (Lancy 2012b).

3. Hrdy (2012) suggests that the infant’s gaze-following and close attention to facial expressions and moods—along with a plump body and other neotenous features—are designed to send a clear signal to its mother and other caretakers: “Keep me!”

4. Recent laboratory studies underscore that human children exhibit prosocial behavior spontaneously from the age of three or earlier and are more readily prosocial than juvenile chimps (House et al. 2012).

5. Or as early as twelve months in a very recent study of the false belief component (Barrett et al. 2013).

6. Evidence for plasticity and “reserve capacity” is readily noted in primates as “orangutans, gorillas and bonobos use tools with dexterity and sophistication in captivity but rarely use them in the wild” (King 1994:121). Reserve Capacity (RC) is also evident in the human growth pattern where the growing child overshoots the necessary capacity to begin reproducing (Crews 2003). And RC can “be channeled into trade-offs between greater growth, immune function, mating behavior, and/or reproduction and parental investment (Bogin 2013:34).”