

Flexible Caretakers

Responses of Toba Families in Transition

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Alloparenting in Foraging Societies

The study of allomothering has received increasingly more attention from anthropologists and evolutionary biologists during the last decade. It is now well established that, compared to other primates, human children require extensive maternal care or investment. Considerable evidence shows that they also require non-parental investment as well if they want to improve their chances of survival. Furthermore, it has been hypothesized that allomaternal help was essential during human evolution (Hrdy 1999, 2005). According to the cooperative breeding hypothesis, childcare provided by people other than the mother played a pivotal role in shaping our species (Hrdy 2005). Allomothering would have allowed women to have energetically expensive babies and shorten inter-birth intervals without jeopardizing child survival. A special case of this line of reasoning is known as the 'Grandmother Hypothesis', developed by Kristen Hawkes and her colleagues (Hawkes et al. 2001; Hawkes et al. 1998; O'Connell et al. 1999). This hypothesis proposes that help provided by post-reproductive female kin, particularly maternal grandmothers, was critical for child survival and a major driving force in human evolution. However, childcare practices do not leave fossils. Thus, we do not really know, and probably never will, what the exact childcare pattern or variety of patterns were the norm in the Pleistocene. However, evidence derived from extant foraging societies can give us some clues on the variables that may have had an impact on the way children were raised, allowing us to attempt a reconstruction of the history of the human family.

A quick review of the best-studied hunter-gatherer societies reveals a considerable variability in the degree of use of allomothers around the world. For an extensive re-

view of childcare patterns in hunter-gatherer groups, readers should consult Konner's reevaluation of the hunter-gatherer childhood model (Konner, 2005). In Table 5.1, I present examples of the variability in allomothering practices in eight foraging societies from around the world. This spectrum takes us from no use of allomothers among the Aché of Eastern Paraguay, to intermediate use among the Hadza of Tanzania and the Hiwi of the Venezuelan llanos, to the Efe of the Ituri Forest: the most extreme example of allomothering in a foraging population. Among the Aché, childcare seems to take priority over all other maternal activities, including foraging. Aché mothers carry infants and toddlers all the time; they even sleep in a sitting position, cross-legged with the infant on their laps (Hill and Hurtado 1996). Quite oppositely, Efé infants as young as three weeks old spend almost 40 per cent of their time in

Table 5.1. Comparison of use of allomothering in selected foraging populations.

| Ethnic group | Local ecology | Degree of use of allomaternal infant care | Who allocates? | References |
|-----------------|----------------------|---|--|--|
| <i>Aché</i> | Neotropical forests | No use of allomothers | No one | Hill & Hurtado 1996 |
| <i>Yanomamö</i> | Neotropical forests | Very low | Female kin (if ever) | Kuzara & Hames 2004 |
| <i>!Kung</i> | Dry savannah | Intermediate-low | Girls, multi-age peer group | Konner 2005 |
| <i>Shipibo</i> | Neotropical forests | Intermediate | Female kin preferentially, siblings, other relatives | Hern 2004 |
| <i>Hiwi</i> | Neotropical savannah | Intermediate | Kin women, kin men, older sibling | Hurtado et al. 1992 |
| <i>Hadza</i> | Dry savannah | Intermediate | Grandmothers, fathers (dry season) | Marlowe 2005 |
| <i>Aka</i> | Tropical forest | Substantial | Fathers, other kin | Hewlett B. 1991; Hewkett & Lamb 2005 |
| <i>Efe</i> | Tropical rain forest | Very high | Kin boys and girls, kin men, kin and nonkin women | Ivey 2000; Ivey et al, 2005; Tronick et al. 1987 |

physical contact with individuals other than their mothers and by five months of age, babies spend more time with allomothers than with their own mother (Ivey Henry et al. 2005; Tronick et al. 1987). In between these two extremes we find a whole range of childcare practices. There is also variation, but to a lesser extent, in the identity of the alternative caretakers in those societies that do show alloparenting care. Female kin, particularly grandmothers and sisters, are more frequently engaged as caretakers than other sex and age categories. Two common features emerge from the analysis of childcare patterns in different societies. First, regardless of the degree of use of allomothering, the mother is still the primary caretaker ('maternal primacy', Konner 2005). Second, although not all studies evaluate age of the baby, there is a marked tendency to rely more on allomothers as the child grows. This tendency most likely reflects breastfeeding and subsistence work patterns in each society.

Several hypotheses, at different levels of analysis and from different perspectives, have been advanced to explain the high variation in use of alternative caretakers in foraging societies. Paula Ivey (Ivey 2000) summarizes evolutionary explanations of allomothering behaviour in three major, not mutually exclusive, groups: nepotism, reciprocity, and learning-to-mother. In a nutshell, assuming that most cases of allomothering involve close kin, allomothers would act nepotistically because they would increase their own genetic representation by helping parents rearing close relatives. Other reasons for explaining the evolution of alloparenting involve reciprocal altruism. In small human groups, with frequently interacting individuals (even if unrelated), allocare could be considered a cooperative behaviour, such as food sharing: 'today I help you, tomorrow you help me'. Finally, the learning-to-mother hypothesis proposes that allomothers gain personal, but delayed benefits through skills acquired from caring for someone else's offspring. The general observation that young girls are frequently observed as alternative caretakers seems to support this hypothesis. The 'helping-at-the-nest' behaviour (Emlen, 1984) exhibited by older sisters would combine the first and last of these evolutionary explanations of allomothering. By caring for their younger siblings, girls would increase their parents' reproductive success, increasing their own inclusive fitness (Crognier et al. 2001; Crognier et al. 2002; Turke 1988; but see Hames and Draper 2004) and, at the same time, they would acquire critical mothering skills for future reproductive attempts.

At another level of analysis, we find hypotheses that evaluate the proximate causes of allomothering behaviour. Variation in childcare patterns has been associated with demographic variables such as number of adult women without children present in the village, density of the settlement, fertility and mortality patterns, and sex and age distribution in camp (Hewlett 1991; Hewlett and Lamb 2005; but see Ivey 2000 for contrasting evidence). Following this model, the degree of use of allomothers would be directly related to the availability of caretakers. The more women without children present in the group, the more allomothering that population would exhibit. Meehan (2005) found that, among the Aka of the Central African Republic, residential locality had an effect on alloparental behaviour. In this foraging group, there was a signifi-

cant variation in the identity of the allomother depending on whether the residence was uxorilocal or patrilocal. Fathers provided more care when the couple resided with paternal kin than when they resided with maternal kin. Also associated with allomothering is the flexibility in schedules and degree of leisure time in each society: the hunter-gatherer lifestyle would be more permissive of multiple caregiving behaviour than the more rigorous farmer or herder schedule (Hewlett and Lamb 2005).

Other lines of research have stressed the local ecological context of the population (Crittenden 2003). A general ecological model would propose that childcare patterns are the result of infants and caretakers employing strategies that are shaped by ecological factors (Hewlett 1988; Tronick et al. 1985). According to one of these ecological explanations, the more dangerous the environment is for infants/toddlers, the less alloparenting a population will exhibit (Hurtado et al. 1992). For example, the lush forests of Eastern Paraguay pose many threats to young Aché children (snakes, poisonous insects, jaguars, poor visibility of the underbush, among others). It is to be expected that alloparenting, especially that provided by young siblings, will not be common in foraging people inhabiting those forests. More benign environments, such as the open plains or the African savannahs would allow mothers to safely leave their children under someone else's care (including less experienced girls) while they engage in productive or reproductive tasks. Allomothering, then, would be more common in these environments. To that respect, Hurtado et al. (1992) proposed a useful construct that allows the comparison of different environments in terms of their degree of HIA, i.e., health insults (to offspring) that a parent can avoid by doing their own childcare. In the previous examples, the Paraguayan forests have a high degree of HIA, whereas savannah environments, in general, have a lower degree of HIA. Allomothering would be directly related to the HIA: the higher the HIA, the lower the use of alternative caretakers and vice versa. The degree of HIA would also be directly related to women's acquisition rates and time spent foraging. The trade-off between women's economic contribution and childcare in foraging societies has been the focus of several excellent behavioural ecology studies (Hames 1988; Hill and Hurtado 1996; Hurtado et al. 1992; Panter-Brick 1989; and Kramer, this volume), which contributed to a better understanding of life history strategies in human populations. The same topic has been analysed from an economic perspective by Gillian Paull in this volume (Chapter 7).

Assuming that alloparenting evolved as an adaptive response to the demands of the environment, what would happen if the ecological context in which a foraging group is immersed were drastically altered? Evidence, by now quite substantial, seems to indicate that alloparenting behaviour is facultative and the entire childcare system of a society could be flexible, reflecting variation both within and between groups. From that perspective, which aspects of childcare would be the most prone to be modified? Would the amount and timing of alloparenting change? Would the identity of allomothers be different? The Toba of the South American Gran Chaco offer us an excellent opportunity to answer these questions. In the next sections I briefly

summarize the ethnohistory of these Amerindian groups, describe their current situation, and analyse the past and present use of allomothers during infancy. I will conclude by evaluating whether a radical change in subsistence activities correlates with changes in childcare patterns.

The Toba of Argentina

The Toba are one of the eighteen linguistically different indigenous groups inhabiting the Gran Chaco. The Toba belong to the Guaycurúan linguistic family. There are written references to the Gran Chaco Indians from European soldiers from as early as the mid 1500s (Schmidel 1970). These groups successfully resisted Spanish colonization and Argentine expansion policies until the late 1800s. Chacoan Indians, particularly the Toba, who adopted the horse complex, had a reputation of being fierce warriors (Martinez Sarasola 1992). Despite considerable language variation, all Chacoan indigenous groups shared similar subsistence economies. The groups were traditionally nomadic or semi-nomadic hunter-gatherers, with occasional horticulture (Braunstein and Miller 1999; Mendoza and Wright 1989). Female gathering played a major role in Chaco economies, complementing the almost exclusively male activities of hunting, fishing, and honey collecting. They organized themselves in exogamous bands led by family chiefs (Braunstein and Miller 1999). Monogamy was, and still is, the norm.

Mendoza (1994) defines a Toba residential unit as 'a family unit culturally defined by relatedness, genealogy, and co-residency, where people developed specific tasks related to production, distribution, and transmission of knowledge and to the reproduction of the members' (ibid: page 243, my translation). The most frequent residential unit was the matrilineal, extended family. This unit consisted of an adult pair, their offspring, the woman's parents and, eventually, her bachelor siblings.

There is little information on alloparenting practices in Chacoan hunter-gatherers. Interviews with elders suggest that both men and women spent time foraging and left infants with post-reproductive women or young female relatives (unpublished field notes). Some also reported that ten to twelve-year-old girls were also recruited as allomothers. During the *algarroba* fruiting season, a period of intense collection in the hottest months of the year, women left infants preferably with grandmothers or great aunts. In the absences of those, they used to take with them girl relatives (daughters, sisters) to mind the baby while they collected the *algarroba* fruits (Marcela Mendoza, pers. comm.). Fathers, or other men, were never mentioned as being possible caretakers, not even during the fruit collection season, which was said to be the time 'for men to rest and women to work'. It is notable that Toba elders always mention alloparenting in relation to women's foraging activities.

Until the 1930s most communities still relied on foraging for their subsistence. During the last century, disruptions to their traditional lifestyle (e.g., through missionisation, state limitation of their mobility) and ecological deterioration of the hab-

it forced many communities to migrate to urban centres and become sedentarised. At present, indigenous communities in the Gran Chaco fall along an acculturation continuum which goes from the more traditional, living in rural, isolated areas, to the more Westernized communities living in the periphery of most non-indigenous towns in the Gran Chaco and in the city of Rosario and Buenos Aires (Miller 1999). This variability of settlement patterns provides a good opportunity for a long-term study of the role of local ecology and economics on alloparenting structure, fertility, and gender relations.

Alloparenting in a Rural Toba Community

As part of the Chaco Area Reproductive Ecology (C.A.R.E.) program, our research team is currently conducting a long-term study of the reproductive ecology of the Western Toba, a group of 7–10 communities living in a remote, rural area of the dry Chaco, about 500 km west of the city of Formosa, Northern Argentina. A total of 1500 people live in a 35,000-ha., community-owned property. Although there is a certain degree of mobility both within the property and between the property and a more urbanized town located 50 km away, most families are sedentary and have been so for the last thirty years.

These groups still rely considerably on hunting, gathering, and fishing for their subsistence. Depending on the season, the average percentage of foraged items varies between 25 and 75 per cent (Gordillo 1995, and unpublished data). In this highly seasonal environment, the months of October to February are the bountiful months. Women collect several kinds of fruits (*algarroba*, *chañar*, *mistol*), and wild legumes during the early good season. Men collect honey and hunt rabbits, small deer, peccaries, and armadillos. March and April are the months of fish abundance, but a poor season for hunting and collecting. Families eat mainly fish and honey. Some families even move to a temporary camp closer to the wetlands in order to be closer to the fishing places. The following months (May to July) are dry and cold and resources from the forest are scarce (Valeggia et al. 2005).

During this part of the year these rural communities also tend small, low-maintenance gardens that yield melons, watermelons, and various types of squash. Most families supplement their diet with store-bought food, such as noodles, wheat flour, rice, eggs, and beef. Cash to purchase such items comes from different sources: government subsidies for large families or for unemployment (both men and women), temporary jobs men take in the nearby towns (men), permanent jobs such as health agents and school teaching assistants paid by the provincial government (very few men), and returns from the sale of weavings and handicrafts to travellers and merchants from Formosa city (women).

We conducted a series of interviews aimed at estimating the daily time allocation and diet composition of Western Toba adult men and women at different times of the year during one calendar year (2002–3). We interviewed approximately 102 men and

98 women, ages fifteen to sixty years old (Valeggia et al. 2005). From these interviews we were able to glean information about the performance and frequency of childcare activities in men and women of different ages. Only two men, aged twenty-five and thirty-six, reported minding children as an activity, and both of them did it during the time of fruit gathering. Both men were married and they reported having taken care of their own infants. As expected, all nursing mothers indicated that they provided care to their infants. Across all seasons, an average of 52 per cent of postmenopausal women indicated having performed childcare activities. A similar percentage (49 per cent) was found for nulliparous women aged fifteen to nineteen years old.

As part of a study of time allocation and subsistence activities, we also conducted day-long observations of families in which there was at least one infant (< 24 months old). We visited twenty-four families from dawn to dusk and recorded, every fifteen minutes, who was taking care of the infant. These observations confirmed that adult men seldom provided infant care: they were in charge of the infants in less than 2 per cent of the observation points (Figure 5.1). We found that the mother was the main caretaker in about 60 per cent of the observation points. Older sisters and maternal grandmothers were the two categories that most contributed to allomaternal care, followed by aunts and female cousins.

Ad libitum observations (unpublished) also suggest that it is mostly young, related girls who are the main providers of alloparenting care, at least for nursing infants. During the fruit-gathering season, mothers usually take their nursing infants with them, but they also take along older daughters, young sisters, or nieces that carry the baby when they are actively gathering fruits in the forest. Weaned children (approximately two to four years old) usually join older children's groups and roam around the community with them, only going to their mothers when they are sleepy or hungry.

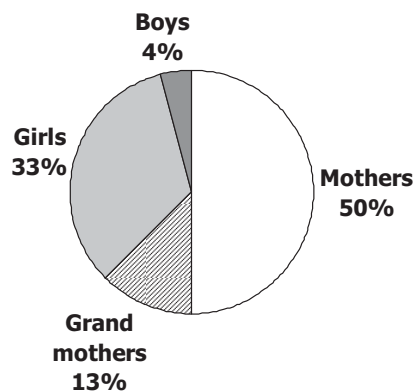


Figure 5.1. Mean percentage of observation points by caregiver category in a rural Toba community.

Alloparenting in a Peri-urban Toba Community

Our C.A.R.E. Program studies extended to Namqom, a peri-urban village located 11 km north of the city of Formosa, northern Argentina. A population of approximately 2,500 people is distributed in an area of 120 ha. Since their settlement in 1972, the community has been growing rapidly because of a high fertility rate (TFR = 6.7, Valeggia and Ellison 2004) and massive immigration from rural communities. The degree of mobility in this community is quite low and current lifestyle can be characterized as sedentary.

The Toba of Namqom rely mainly on the wage labour of men and on government subsidies for their subsistence. Most men are hired as temporary workers in Formosa city or by development programs. Some men work on a permanent basis for state organizations receiving a stable monthly pay. Women's activities include household chores, care taking of children, and basket weaving. Some women are employed as cooks, teaching assistants, or housemaids, while others receive unemployment subsidies and must devote some hours to community work. Women sell their handicrafts door-to-door in the city and it is common to see them, accompanied by several children, walking along city streets selling baskets or asking for hand-outs from non-indigenous people.

In the context of a longitudinal study of breastfeeding and fertility (Valeggia and Ellison 2004), we collected data on childcare practices in this population. We observed a group of seventy-five breastfeeding mothers and their infants (aged zero to eighteen months) longitudinally for an average of eleven months. We visited each of the mother–infant pairs twice a month and observed the interaction between the infant and any available caregiver.

Caring for their infants was the activity in which Toba mothers spent most time (Figure 5.2). On average, they spent 34 per cent of their waking time tending their babies. Mothers were the infant's primary caregivers most of the time (77 per cent of the observation points). The average 22 per cent of alloparenting in this population is accounted for by the participation in care taking of close relatives of the baby (non-related allomothers accounted for only 0.8 per cent of the observation points, Figure 5.3). The use of alloparents increased with age of the infant ($F_{1,771} = 14.8, p < 0.001$) from 17.3 per cent at 0 to 3 months of age to 41.7 per cent for infants older than 18 months. Allomothering was not related to the age of the mother nor her parity (all $p > 0.10$), although mothers with many children tended to use alternative caretakers more often.

In contrast to the rural Toba population, fathers were the most frequent allo-mothers. The father's involvement in childcare increased with the infant's age ($R^2 = 0.2, p = 0.02$). In a couple of cases, the father was the only caretaker during the entire observation period. In a preliminary study, we found that babies whose fathers were present during the first two years of life spent fewer months in sub par nutritional status than babies whose father was absent (Ellis and Valeggia 2003). However, babies of single mothers had fewer respiratory infections than babies of married mothers.

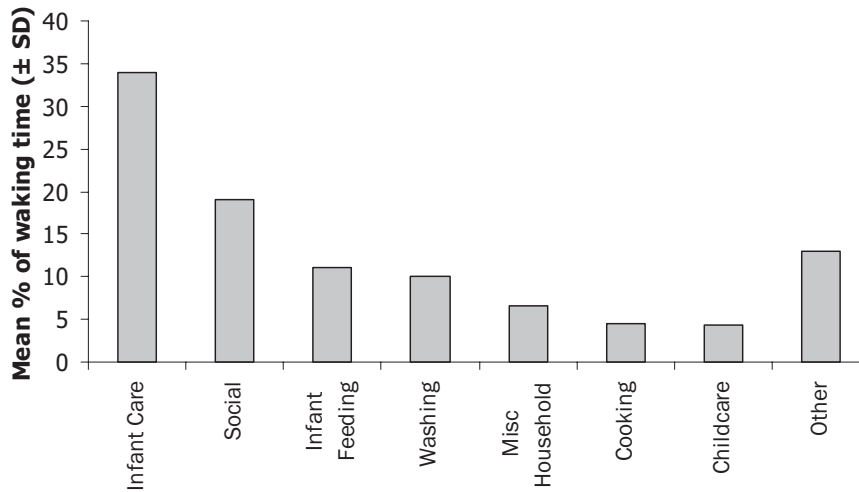


Figure 5.2. Time allocation pattern of nursing Toba mothers.

Interestingly, married and single mothers did not differ in the amount of alloparenting use. We did not find differences in any other health variable between children of married mothers and children of single mothers. Care provided by others in single-mother homes even if it does not differ in frequency or degree from married-mother homes seems to compensate for lack of paternal help.

The other important categories of alloparents are female relatives, mainly older sisters, grandmothers, and aunts (Figure 5.3). Even if the amount of alternative care from other females is relatively low, mothers with more women relatives in the household relied more on alloparenting than mothers who had fewer relatives ($\rho = -0.3$, $p = 0.012$). Grandmothers and aunts, when available, provided care regardless of

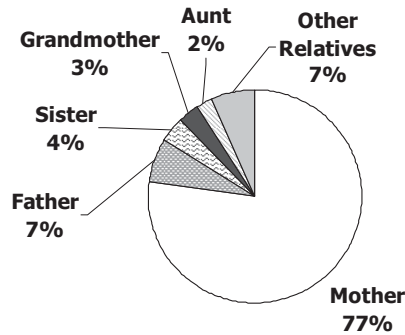


Figure 5.3. Mean percentage of observation points by caregiver category in a peri-urban Toba population.

the age of the baby. On the other hand, girl helpers were not involved in care giving when the infant was young and only became part of the 'alternative care staff' when the baby was older (fifteen months and older). In fact, in a study of the influence of girl helpers on their nursing mother's time allocation, we did not find differences in infant care activities between mothers with older daughters and mothers without daughters (Bove et al. 2002). Women with girl helpers spent more time in social activities and less time in domestic work.

Allomothering in Transition Times: A Conclusion

Along the acculturation continuum currently exhibited by Chacoan indigenous populations, the ecological context of rural Toba populations seems to be the most similar to the conditions of their traditional past. Although they have changed their nomadic lifestyle for a more sedentary one, the general environment (both physical and social) resembles what early ethnographers had described for these populations. Our observations of rural communities suggest that few changes in the local ecology are related to few changes in the traditional pattern of alloparenting. Mothers still recruit helpers quite often, mainly during the demanding fruit season. These helpers are, as in the past, related post-reproductive and non-reproductive female kin.

In contrast, the peri-urban population is undergoing a drastic lifestyle change, with important demographic, nutritional, and epidemiological consequences. Families do not forage any more and rely heavily on subsidies from the government. Several demographic variables that may have a direct impact on availability of allomothers have been changing rapidly in the last few decades. Both age at first birth and inter-birth intervals are steadily declining, while total fertility rate is increasing (Sanchez-Ocasio 2003; Sanchez-Ocasio and Valeggia 2005). As a result, there is a great overlap of generations. Grandmothers still have nursing infants of their own and therefore are not available as allomothers. Unemployed or partially employed husbands are present at home a considerable portion of the day. Our study suggests that, in response to a less demanding subsistence lifestyle and a changing social context, alloparenting practices changed among the Toba. Unlike their more traditionally living relatives, peri-urban mothers rely less on others for taking care of their nursing infants. And when they do, it is husbands more than other relatives who collaborate.

These findings agree well with what Barry Hewlett found for other hunter-gatherer societies (Hewlett and Lamb 2005). He proposed that variability in multiple care-giving practices could be explained by differences in demographic factors. For example, a high adult-to-child ratio would favour allomothering. With higher fertility rates than before, this ratio is nowadays quite low in Namqom, explaining some of the differences with the rural population. In addition, as Hewlett again proposed, the amount of leisure time is also having an impact on who cares for the baby and how much. Adult men have more free time available than adult women, who are busy raising their own children.

However, availability of alternative caregivers does not explain the differences found in our studies. Given Namqom's high fertility rates, we would expect larger families, with more availability of older sibling care. Although in fact families are larger and there are plenty of opportunities for 'helping at the nest', girls do not provide direct infant sibling care as much. A possible explanation would be that in this peri-urban setting, girls attend school and, thus, are not at home to participate in their sibling's care. Still, school hours are 7:30 AM to 12:00 PM and most girls do not engage in school-related activities in the afternoon (Bove et al. 2002). Older daughters do help, but not with infant care. Childcare seems to be a priority for women in Namqom. The amount of time nursing mothers spent in infant care (approximately 35 per cent) is considerable and it exceeds the normative 10 per cent of women's time allocated to childcare in other cultures (Ware 1981). This pattern is not at all infrequent and has been documented in other foraging and non-foraging cultures (Galimore et al. 1974; Hill and Hurtado 1996).

Because of its marginalization from mainstream economic activities as well as from traditional subsistence activities, Namqom offers little opportunity for women's work outside the home. In addition, the kind of domestic work required in the household does not require sophisticated skills or demanding physical activity (Valeggia and Ellison 2004). In this situation, domestic work, a time-demanding task that can be delegated to helpers, might be deemed the responsive variable while care of infants is the constant priority for mothers. It is important to note that this study was focused on infants who were still nursing (exclusively and semi-exclusively). As seen in many other societies, it is possible that weaned children receive more allomothering care than nursing infants. In fact, the most frequent sight in Toba villages is the multi-age sets of children playing in common areas (streets, plazas) and going from household to household (Mendoza 1994). These multi-age sets include toddlers usually carried by older siblings. On many occasions, when asked about where her last child was during an interview, the mother would reply that she did not really know, that the child must be with 'sus hermanos' (his/her siblings), apparently not giving much thought to it. The presence of an older sister in the multi-age group would potentially be beneficial since she could provide the weanling with closer attention than other less-related or younger children in the group would. Given the high mortality at weaning in Toba populations (23 per cent, Programa Nacional de Nacimientos y Defunciones 2000), it is likely that sisters can make an important contribution to their young sibling's health.

The effects on childcare of changing lifestyles in hunter-gatherer groups have been recently analyzed for the Baka of southeastern Cameroon (Hirasawa 2005). Originally a foraging nomadic society, the Baka are now settled and rely mainly on farming for their subsistence. Hirasawa's data suggest that, as is the case for the Toba, many childcare behaviours change when foragers settle down. In contrast to the Toba, however, the settled Baka are shown to depend more on children (mainly siblings) for childcare than foragers. Time in direct physical contact and age at weaning are

other child-rearing characteristics that seem to have decreased as they became settled. This change is most likely related to the shift in subsistence patterns (from foraging to time-demanding farming).

In conclusion, this study suggests that allomothering practices are responsive to changes in the social and physical environment, and, as such, are flexible and dynamic. There seems to be a constellation of biocultural factors affecting whether, from whom, and when to allocate. Looking back into evolutionary times, the study of how those factors impacted on childcare practices in traditional societies can shed some light on our understanding of the evolution of the human family. This study adds to the increasingly stronger evidence which points to childcare being a *time allocation* problem for women in traditional (and non-traditional) societies. Thus, the use of allomothers would be in direct relation to the woman's economic contribution to the family. Looking forward, the study of childcare practices in societies in transition can help us to understand better the mechanics of enculturation, i.e., the process by which children learn their culture. How will the change in time devoted to childcare by the mother affect the way children perceive gender relations and roles in the family? In just one or two generations, a shift from being brought up by several (mostly female) caregivers in a mobile community to being raised by just the mother plus sometimes the father can deeply affect the modal personality of the population (Kelly 1995), and, therefore, the process of cultural evolution.

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