Intergenerational Wealth Transmission and Inequality in Premodern Societies

Wealth Transmission and Inequality among Hunter-Gatherers

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We report quantitative estimates of intergenerational transmission and population-wide inequality for wealth measures in a set of hunter-gatherer populations. Wealth is defined broadly as factors that contribute to individual or household well-being, ranging from embodied forms, such as weight and hunting success, to material forms, such as household goods, as well as relational wealth in exchange partners. Intergenerational wealth transmission is low to moderate in these populations but is still expected to have measurable influence on an individual's life chances. Wealth inequality (measured with Gini coefficients) is moderate for most wealth types, matching what qualitative ethnographic research has generally indicated (if not the stereotype of hunter-gatherers as extreme egalitarians). We discuss some plausible mechanisms for these patterns and suggest ways in which future research could resolve questions about the role of wealth in hunter-gatherer social and economic life.

In this article we characterize the main features and dimensions of variation in wealth transmission in hunter-gatherer societies. We begin by defining the socioeconomic category "hunter-gatherer" as a production system. We then discuss wealth characteristics, wealth inheritance, and socioeconomic inequality among ethnographically known hunter-gatherers. The next section provides ethnographic background and an outline of data collection methods for five sample populations (Ache, Hadza, Ju/'hoansi, Lamalerans, and Meriam). Here we also present quantitative results regarding various wealth categories and their importance, as well as intergenerational wealth transmission, for each of these societies (as well as one measure for the Tsimane, a horticultural-forager population discussed in more detail by Gurven et al. 2010, in this issue).

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The concluding section summarizes our findings on the magnitude and patterning of intergenerational wealth transmission in the sample populations and discusses their relation to the broader set of hunter-gatherer societies.

Hunter-Gatherer Production Systems

We define hunter-gatherer (forager) production systems as those that subsist primarily on undomesticated species of plants and animals, even if some domesticated species or their products are obtained through trade or ancillary cultivation. Degree of reliance on domesticates ranges along a continuum, with few if any extant societies at zero. Ethnographies and cross-cultural databases, however, do describe a large sample of societies with total or near-total dependence on foraging (table 1).

Ethnographically described hunter-gatherers constitute a numerically small but theoretically crucial set of societies. If our species is some 200,000 years old, then the strictly hunting-gathering phase occupied well over 90% of its history; societies relying primarily or even exclusively on foraging persisted in various parts of the globe well into the twentieth century. Both ethnographic and archaeological records testify to considerable diversity in these societies, and contemporary foragers are by no means survivals of some unchanged Paleolithic lifeway (Kelly 1995). This diversity encompasses ecological, demographic, economic, sociopolitical, and ideological variation, to the point that some have questioned how meaningful the "hunter-gatherer" label can be (as reviewed in Kelly 1995). We find the category too useful to abandon but recognize the need for distinctions within it.

Focusing on ethnographically described hunter-gatherers, we can differentiate smaller, more mobile societies—whose members reside in camps or villages of a few dozen people or less, engage in considerable residential mobility, and lack formal hereditary political officials—from larger, more sedentary groups with year-round or seasonal villages and hereditary social and political ranking. This distinction is less typological (as the defining variables are continuous rather than categorical) and more easily related to wealth transmission than are distinctions such as immediate return/delayed return (Woodburn 1982) or forager/collector (Binford 1980). Residential mobility in a large sample of hunter-gatherers ranges from 0 to 58 moves per year, with a mean of 7.4 and a median of 5.5 (table 1). In the smaller but more geographically representative sample of foraging societies in the Standard Cross-Cultural Sample (Murdock and White 1980), more than two-thirds are classed as "nomadic" or "seminomadic" and less than a tenth as "sedentary" (table 2). We have removed equestrian societies and a few primarily horticultural cases from the data sets summarized in table 1. While recognizing that most cross-cultural databases suffer to various degrees from problems of reliability, representativeness, and sampling bias, our hope is that the patterns they reveal are meaningful if not terribly precise.

Although the diversity encompassed in the foraging production system is great, it has its limits. Constraints on the degree to which resource productivity can be intensified, plus

Table 1. Summary characteristics of ethnographically described hunter-gatherer societies (from Marlowe 2005 unless otherwise indicated)

Variable	Average	Median	Range	Cases[a]
Population density (per km^2)	.30	.12	<.01–11.0	312
Total fertility rate (live births/woman)	5.4	5.5	.8–8.5	47
Residential group size	41.4	27	13–250	263
Residential group mobility (moves/year)	7.4	5.5	0–58	312
Dietary reliance on wild resources (%)	99.4	100	80–100	367
Gathering	36.3	40	0–90	367
Hunting	30.8	30	0–89	367
Fishing	32.3	25	0–95	367
Males married polygynously (%)	14.1	10	0–70	212
Females married polygynously (%)	21.4	10	0–90	51
Postmarital residence[b]				193
Patrilocal/virilocal (%)	51.3			99
Matrilocal/uxorilocal (%)	14.5			28
Other (%)	34.2			66
Descent (%)[c]				36
Bilateral	63.9			23
Patrilineal	13.9			5
Matrilineal	11.1			4
Ambilineal or double descent	11.1			4

[a]Number of societies or populations in the sample for a given variable; equestrian cases excluded.
[b]Residence data from table 7.2 of Kelly (1995).
[c]Descent data from Marlowe (2004), using the Standard Cross-Cultural Sample.

Table 2. Summary characteristics of hunter-gatherer societies in the Standard Cross-Cultural Sample (SCSS)

Variable[a]	Categories (societies)[b]
Residential mobility (V150)	Nomadic: 32% (12); seminomadic: 39% (15); semisedentary: 21% (8); sedentary: 8% (3)
Land ownership (V1726)	Predominantly private: 8% (2); partially communal: 16% (4); communal only: 76% (19)
Land inheritance (V278)	No individual inheritance: 90% (28); matrilineal: 3% (1); patrilineal: 6% (2)
Movable property inheritance (V279)	No individual inheritance: 35% (10); matrilineal: 7% (2); patrilineal: 45% (13); bilateral: 14% (4)
Social stratification (V158)	Egalitarian: 68% (26); hereditary slavery: 24% (9); social classes: 8% (3)
Primary sources of political power (V93)	Subsistence production: 82% (31); political or religious office: 11% (4); warfare booty: 5% (2); trade: 3% (1)

[a]"V*n*" indicates variable number in the SCSS (Divale, Khaltourina, and Korotayev 2002; Murdock and White 1980).
[b]Percent (number) of hunter-gatherer societies in the sample for a given variable. Percentage is calculated on cases with data available (excluding missing cases from the denominator). Societies were selected when V858 (predominant subsistence) was listed as hunting, gathering, fishing, or anadromous fishing (types 1–4).

exclusion from many resource-rich habitats (by agricultural peoples), results in lower population densities and much smaller camps or villages than is typical of horticultural and agricultural populations (see table 1; compare with Gurven et al. 2010 and Shenk et al. 2010, in this issue). Comparative analyses of fertility have demonstrated that forager populations have somewhat lower fertility rates than agricultural (but not necessarily horticultural or pastoral) populations (Bentley, Goldberg, and Jasieńska 1993; Sellen and Mace 1997). This difference has, in turn, been ascribed to the effects of lower mobility and more early-weaning foods in agricultural populations; however, detailed cross-cultural analysis shows that agropastoral populations do not differ from foragers in weaning-food availability or average age at weaning but do have earlier onset of weaning (Sellen 2007; Sellen and Smay 2001). Juvenile survival rates are also lower in well-studied forager populations than in horticultural and pastoral ones (Gurven and Kaplan 2007).

Wealth and Inequality in Hunter-Gatherer Societies

As detailed in Bowles, Smith, and Borgerhoff Mulder (2010, in this issue; see also Borgerhoff Mulder et al. 2009), we define wealth as any attribute of an individual that contributes to a flow of valued goods or services. This broad definition is subdivided into "wealth classes" (embodied, material, and relational wealth), each encompassing various "wealth types" (e.g., hunting success, household goods, and sharing partnerships), as detailed below.

Our collective judgment, based on many years of field research and the published ethnographic corpus, is that in most foraging societies, variation in material wealth has less effect on well-being than does variation in other forms of wealth, such as health or social connections. This generalization is more likely to hold for mobile, low-density foragers (which constitute the great majority of ethnographically described foraging societies; see tables 1, 2) than for sedentary, high-density foragers. There are at least three reasons for this. First, high mobility reduces the possibility or profitability of investment in land or fixed facilities (e.g., weirs, permanent houses). Accordingly, land ownership among high-mobility groups is overwhelmingly communal and cannot be transmitted to individuals or kin groups (table 2). Second, reduced mobility depends on dense and predictable resource patches (e.g., salmon streams), and access to these patches is often controlled by kin groups or other subsets of the population; if variation in patch productivity is great enough, those who control the richest patches can exchange access to them for economic and political services (Boone 1992; Smith and Choi 2007). When resource abundance is less concentrated, access is harder to control; individuals can therefore resist any moves toward institutionalized inequality, including "voting with their feet" to relocate elsewhere if necessary. Finally, mobility makes it harder to accumulate material property. Moveable material property, such as tools, clothing, and valuables, is generally treated as individual property and is often transmitted to descendant kin (table 2). In most foraging societies, however, such property can usually be manufactured by any adult of the appropriate gender or obtained fairly readily; exceptions include items involving highly specialized manufacture or obtained through limited trade contacts, as well as wealth and prestige goods in some sedentary, less egalitarian societies.

Most adults in hunter-gatherer societies actively contribute to food production and processing as well as tool manufacture and maintenance. In addition, child care and provisioning are generally parental duties. Most of these forms of labor require considerable strength and stamina, visual acuity, and other aspects of good health. As a result, we expect somatic wealth to be of prime importance to success and well-being. On the other hand, those who suffer periodically from suboptimal somatic endowments can usually rely on aid from others in the form of food sharing, assistance with child care, and protection in disputes. This social insurance is normative and widely available, but some evidence suggests that the quality of such aid will vary according to the "relational wealth" (reputation, size, and quality of the social network) of the needy individual or household (Gurven et al. 2000; Nolin 2008; Wiessner 2002).

Table 3. Descriptive features of project populations in comparison to other hunter-gatherers

Population	Population density[a]	Mobility (moves/year)[b]	Residential group size	Reliance on fishing	Reliance on hunting
Ache	.04	75–100	43.4	Low	High
Hadza	.24	7	29.3	None	Moderate
Ju/'hoansi	.07	5.5	17.4	None	Moderate
Lamalera	67.40	0	1,200	High	High
Meriam	86.00	0	430	High	Low
Average	30.75	20.0	344.1	. . .	. . .
Marlowe database[c]	.30	7.4	41.4	32.3%	30.8%

[a]Density in people/km^2, as compiled by Marlowe (2005) or observed by project ethnographers (published work or personal communication).
[b]Observed moves per year of camp or village (sources as above).
[c]With exceptions noted in "Hunter-Gatherer Production Systems" and footnote a of table 1.

Knowledge presents some special difficulties. Information needed to successfully harvest resources and process them into food or other goods is widely available (on a gender-specific basis), although some exceptions apply, particularly in more sedentary foraging societies (e.g., manufacture of complex watercraft). Knowledge concerning ritual practices and trading partnerships, however, is often more differentially distributed. Commonly, certain individuals have esoteric knowledge held to be useful in curing illness, combating sorcery, or predicting weather and availability of game. Although relatively few hunter-gatherer societies have well-defined social strata or politico-religious offices (table 2), our impression is that the great majority do recognize important differences in specialized realms of knowledge, differences that may have status correlates and yet coexist with normative and de facto egalitarianism in other forms of wealth (e.g., Bird and Bliege Bird 2009).

In sum, a primary constraint on material-wealth accumulation and inequality in hunter-gatherer societies is the degree of residential mobility, which in turn is heavily influenced by spatiotemporal resource variability (Cashdan 1992; Kelly 1995). Generalizations about wealth and inequality differ greatly, depending on whether one focuses on the more mobile low-density foragers or on the smaller set of sedentary, high-density foragers; the latter, after all, includes societies (e.g., Northwest Coast, Calusa) with slavery, hereditary nobility, stores of durable valuables, and other features strongly related to intergenerational wealth transmission.

Ethnographic Sample and Methods

Overview of Sample Populations

The five populations discussed and analyzed in detail below include the Ache of South America, the Hadza and the Ju/'hoansi of sub-Saharan Africa, the Lamalerans of southeast Asia, and the Meriam of Melanesia. In addition, we provide an analysis of hunting-return rates among the Tsimane, a South American horticulturalist-forager society discussed at length by Gurven et al. (2010).

Three of these populations (Ache, Hadza, and Ju/'hoansi) are clearly at the low-density, high-mobility end of the scale, with values in these measures, as well as residential group size, close to the averages for a large sample of foragers (table 3), although Ache in the presettlement period have very high estimated residential mobility. In contrast, two populations are very sedentary and (for foragers) of high density: Lamalerans (coastal sea hunters) and Meriam (coastal fisher-horticulturalists), each inhabiting one large village. It is noteworthy that the two high-density populations are characterized by high reliance on marine resources, a pattern found in larger samples of forager populations (tables 6-2, 6-4 in Kelly 1995; figs. 4, 5 in Marlowe 2005). However, even the Lamalerans and Meriam display relatively low levels of socioeconomic inequality, compared to some other sedentary coastal foragers, such as Northwest Coast Indians, Chumash, or Calusa.

Ache

Ethnographic background. The Northern Ache lived as isolated hunter-gatherers in the tropical forests of eastern Paraguay until peaceful contacts with outsiders in the 1970s. At first contact the population contained 557 individuals, scattered in a dozen or more residential bands of flexible composition roaming a region of about 20,000 km^2. The traditional economy was based on hunting medium-sized mammals (about 80% of all calories came from armadillos, paca, white-lipped peccaries, capuchin monkeys, and tapir) with bow and arrow, extracting palm starch and hearts (about 10% of all calories), and collecting larvae, honey, and fruits (about 10% of all calories). Residential bands were highly cooperative, with individuals regularly adopting complementary roles in food acquisition through the day (Hill 2002) and sharing all game and a good portion of other foods among most band members (Kaplan and Hill 1985). Band members also regularly cared for each other's children and freely exchanged or provided a variety of goods and services. Only mate acquisition was markedly competitive rather than cooperative.

Ache residential bands ideally centered around a father and his adult sons, but in practice bands often consisted of bilateral kin (a core set of brothers, or brothers and sisters, their children, some affinal kin, etc.). Membership in these bands

changed frequently, although core sets of kin were almost always together. Bands had no formal leadership; there were no ritual or ceremonial divisions and no marriage prescriptions or proscriptions other than avoidance of all first cousins. Club fights were organized as a form of ritual combat between men with grudges, and close kin alliances often determined "teams" of combatants. Status was attained through killing others, hunting skill, and personal charisma related to oratory skills and emotional connections. Women participated in decisions but did not wield influence equal to that of men, and they were often quite subservient. Their main activities were intensive child care (the forest contains many mortal dangers for small children), transportation of family goods, and extraction of palm products.

After contact in the 1970s, the Northern Ache, along with three other independent dialect groups of Ache, were relocated to six reservation settlements. Three of these, near the Mbaracayú forest reserve, have been intensively studied. The reservation economy is based on subsistence farming (manioc, maize, beans, peanuts, melons, etc.) and frequent treks into the forest. A few individuals are engaged in nearby wage labor (or teach school). More details on general aspects of Ache ethnography are available in other publications (e.g., Hill 1994; Hill and Hurtado 1996, 1999), and approximately 130 publications on the behavioral ecology of the Ache are available at Kim Hill's research Web site (http://www.public.asu.edu/~krhill3/Publications.html).

Wealth measures. Ache "wealth" can be conceptualized in three dimensions. First, some individuals produce more resources on a consistent basis (higher income), and when alone or in small camps, they and their families experience higher resource consumption. If excess production is shared in a partially contingent fashion, high producers may also obtain a greater share of the valuable contributions of other band members (including food but also other goods and services). But differential access to the goods and services of others (including reproductive access) can also be attained through high-quality social relationships, which constitute a second, nonmaterial form of Ache wealth. Finally, both production levels and social relationships are affected by embodied wealth (body size, health, cognitive ability, etc.), which also affects basic fitness components, such as mortality and fertility rates. Thus, transmissible wealth comes in the form of somatic endowment, productive ability, and social relationships, all of which are potentially heritable.

Body weight is a good measure of somatic endowment because growth is an indicator of childhood disease resistance and because body size associates positively with productive potential and fertility in mammals (Hill and Hurtado 1996). Ache weight has been repeatedly measured with an electronic bathroom scale since 1980. The body weights of all individuals who were measured when over age 18 were employed for analyses. Parental weight was defined as the average of mother's and father's weights, with controls for single parents as well as for age and sex of offspring (see the CA+ online supplement "Estimating the Inheritance of Wealth in Premodern Societies" in the online edition of *Current Anthropology* for details).

Hunting-return rates are the best measure of variability in overall food production for Ache men (there is no equivalent measurement for women). We have monitored the hunting success of Ache men in three communities since 1980. Early data were derived from direct observation by focal follows. Return rates in more recent years are based on informant-reported hunting success in weekly systematic interviews. All data were converted to a daily return rate (kilograms of game live weight per day of hunting), and the average was calculated for each man during each 5-year period from 1980 to 2007 (Hill and Kintigh 2009). Five-year averages were plotted by mean age of each hunter during the period and then smoothed with a Lowess regression in order to determine the age shape of the hunting-returns function. The residual of each man's average from the Lowess age curve was then used to calculate how much above or below the typical hunting returns (in kg/day) each man was for his age. The residuals from each 5-year period for each man were then averaged over his lifetime to get a measure of how good a hunter he had been for his age during the entire 27 years of monitoring. Son's-age residuals of hunting-return rate were regressed on father's-age residuals in order to determine whether men who were good hunters for their age had sons who are also good hunters for their age. These estimates were also corrected for measurement error; reliability was determined by comparing many-period averages (which were available for some hunters) to averages over subsets of the full period. The overall reliability of the hunting data was estimated to be 0.68.

Hadza

Ethnographic background. The Hadza live in a savanna-woodland habitat around Lake Eyasi, south of Ngorongoro Crater and Serengeti National Park in northern Tanzania. Our best estimate of the population is 1,000 (Jones, Hawkes, and O'Connell 2002). Hadza live in camps that average 30 people and change location about every 1.5 months; people often visit or move to other camps as well. This fluid movement helps explain Hadza egalitarianism; when anyone tries to boss others around, the latter simply move away from the bossy person (Woodburn 1982). The most common form of Hadza camp consists of two or three sisters and their families; when their mother is alive, she is likely to also reside in the same camp (Jones, Hawkes, and O'Connell 2005; Woodburn 1964).

The Hadza are central-place provisioners (Marlowe 2006). They often feed themselves while foraging but also take food back to camp. Women gather fruit and berries and dig tubers, usually in groups of three to eight, plus some children. Because all women in a foraging party tend to have a haul of the same foods, most of their food may go to their own households, but often it is shared with anyone in camp. Once back in camp, women roast some of their tubers to feed all

the children present or send them to a group of men sitting in the men's place. Men collect honey and use bows and arrows to hunt a wide range of game, from small (e.g., rock hyrax) to large (e.g., giraffe). Men usually hunt alone. Once an animal is hit, the hunter may return to camp and get other men to help him track the wounded animal. When men bring honey back to camp, it is often shared with those present, but unlike larger game, it can sometimes be concealed and directed to a man's household (Marlowe 2003). When men bring medium-sized and large game into camp, it is shared widely across households (Hawkes, O'Connell, and Jones 2001*a*; Woodburn 1998), but even small game and honey are often shared widely. Despite the widespread sharing, on average the portion of a hunter's catch retained in his household is larger than the share given to each other household (B. M. Wood and F. W. Marlowe, unpublished manuscript).

Hadza have no land or property inheritance or accumulated material wealth. Even though the group is extremely egalitarian, men who are the best hunters have slightly more prestige as well as more surviving offspring (Hawkes, O'Connell, and Jones 2001*a*, 2001*b*; Marlowe 1999, 2003). They achieve the latter not by having more wives over time but by having a higher chance of marrying young women upon divorce (Marlowe 2000). Hadza women usually acquire a great deal of food well into their seventies. Hawkes, O'Connell, and Jones (2001*b*) found that children's growth rates were predicted by their mothers' food returns rather than by their fathers' food returns. They concluded that better hunters achieve their greater reproductive success (RS) by marrying better gatherers. However, their sample was small and covered only 12 months. In a preliminary analysis of a much larger data set, there is no evidence that husbands and wives are assortatively mated with regard to foraging returns. When stepfathers are excluded, men do bring in more food when they have more dependants (Marlowe 1999, 2003).

Wealth measures. The wealth measures used here are weight, grip strength, and foraging success. These measures get at biological traits that might be relevant for other traits that could be counted as social capital, such as foraging skills. The anthropometric data were taken on all people in camp, and many people were measured more than once per year over the years 2001–2006. Stature and weight were measured by previous researchers, and there has been little or no change in the Hadza over the years (Hiernaux and Hartono 1980; Jones 2006; Marlowe and Berbesque 2009). Weight was measured with a Tanita bioelectrical impedance scale, and grip strength was measured with a dynamometer. Strength appears to be important among the Hadza. Women need strength to dig tubers; men need it to pull larger bows, which send arrows to their target faster, and to chop into trees to access honey. Both sexes need to carry heavy loads of food (and often children) long distances. Weight and strength, which are correlated, account for much of the effect that age alone has on these skills. Weight predicted kilograms of tubers acquired per hour by women, men, and children, and strength was correlated with archery skill for males (Jones and Marlowe 2002).

Foraging success was measured for a composite of all foraging activity. The raw data are a person's sum total of all foods brought back to camp per observation day. The weight of foods brought into camp was converted to kilocalories to compute a foraging-productivity score (mean daily kilocalories) for each camp resident: men, women, and children. During the observation periods, almost all women and all men went out from camp to forage every day, women for an average of about 4 hours and men for about 6 hours. The measure of parent-offspring correspondence in foraging success reported here excludes mother-daughter pairs, because they usually dug tubers together and thus including them would overestimate actual correspondences.

Ju/'hoansi

Ethnographic background. The Ju/'hoansi Bushmen of the Kalahari Desert are one of the most thoroughly egalitarian societies known in the ethnographic record, enforcing both "equality of opportunity" as young people start out in life and "equality of outcome" throughout the life cycle. Those who seek to possess more material goods, food, or status are leveled by other group members (Lee 1979; Wiessner 2005). Nonetheless, those who excel in hunting, healing, *hxaro* exchange, and social skills and return benefits to the groups are recognized as *//haiha* (*//aihadi* for women), which can be glossed as "one who has things" or "leader" (Wiessner 2002).

The Ju/'hoansi population of some 2,000 considered here inhabits northwestern Botswana and northeastern Namibia (Biesele 1993; Howell 2000; Lee 1979; Lee and DeVore 1976; Marshall 1976; Shostak 1981; Wilmsen 1989). Until the mid-1970s, Ju/'hoansi subsisted primarily through foraging. When living as foragers, the Ju/'hoan bands inhabited territories with enough food and water to sustain a band in the average year. Each Ju/'hoan man and woman inherited access to the territory of his or her mother and father and could claim a strong hold by assembling kin with similar rights to jointly occupy the land. Spatial and temporal variation in resources, including the availability of water, was high. To buffer themselves from environmental and social risks, the Ju/'hoansi engaged in a system of exchange called *hxaro*, a delayed exchange of gifts indicating an underlying relationship of commitment to mutual support in times of need.

Wealth measures. The wealth measure used here is number of *hxaro* partners, a measure of relational wealth. On average, the Ju/'hoansi in the early 1970s had 16 *hxaro* partners (range 2–42), who were well distributed in space within a radius of 200 km and over different ages, sexes, and abilities. When in need, a person would pack up his or her family, visit a partner, and reside in that camp for as long as necessary. Census data collected by Richard Lee and Polly Wiessner indicate that 93% of all recorded extended visits were made to *hxaro* partners and that, on average, 3.3 months a year were spent living in

the camps of partners (Wiessner 1981, 1982). *Hxaro* partnerships were usually formed with consanguineous kin; they were inherited from either parent or formed during a lifetime with siblings, cousins, aunts and uncles, and so on, but only with affines in exceptional cases. Because of rules for exogamy, it was extremely rare that spouses shared the same *hxaro* partners.

Spheres of *hxaro* waxed and waned throughout the life cycle. Young people began their reproductive career with an average of 13 partnerships, enough to see them through hard times. When the first of their children matured to marriageable age, Ju/'hoansi doubled their spheres of *hxaro*, to an average of 24 partners. With old age and decreased mobility and productive capacity, elders' *hxaro* spheres narrowed to an average of 12 partners. Partnerships could be passed to children by parents as they aged or at their funerals, when their children would take some of their possessions, give them to one of the deceased's partners, and ask that the relationship be continued. Ju/'hoansi marriages were arranged, and *hxaro* played a major role in locating spouses and contracting marriages. *Hxaro* partnerships were linked together to form chains that wound for hundreds of kilometers through the Kalahari and tapped into the broader trade networks of southern Africa. Ju/'hoansi who were well connected in *hxaro* had a better chance of acquiring desired material possessions from afar.

Data on *hxaro* ties were collected from 59 individuals in three randomly selected villages, including both residents and visitors to the village who stayed for weeks or months during the four-month period of the study. Individuals were first asked to list all of their *hxaro* partners, their name, sex, age, marital status, kin relation to ego, area of land rights, and current residence. Subsequently, individuals in the sample were asked to lay out all of their worldly possessions and discuss how they had obtained each one. Of 1,483 possessions recorded, 69% were received in *hxaro* from listed partners, 27% were recently bought or made, and 4% were received from non-Bushmen or Bushmen who were not *hxaro* partners. Number of *hxaro* partners correlated with number of possessions owned by the individual, number of possible alternative residences, hunting success for men, ability as a healer, and social competence (Wiessner 2002).

Lamalera

Ethnographic background. Lamalera is a village of just over 1,200 people and about 317 households located on the island of Lembata in southeastern Indonesia. In the past, Lamalera might have been characterized as a complex foraging society. A permanent resident population subsisted almost entirely by maritime foraging and trading with agricultural villages of the interior. Differences in material wealth among households were likely less pronounced in the past than they are now, but status differences existed. Two autochthonous clans and three founding clans claimed greater status and authority than the other clans, which, according to tradition, arrived later. This created a broad, horizontal hierarchy among clans. A man's social status was tied to that of his clan or to his personal prowess as a hunter (Alvard and Gillespie 2004) and his material success to that of his lineage, whose members cooperatively operated a whaling boat, or *téna.* (Alvard 2003; Alvard and Nolin 2002).

In the early 1900s, the Catholic Church brought formal education to the village (Barnes 1996). With this development, Lamalerans were well positioned to take advantage of opportunities in the expanding Dutch (and later Indonesian) civil administrative infrastructure. Expansion of the wage labor market outside the village brought further opportunities. The consequent emigration has been a feature of Lamaleran demography for most of the past century (Barnes 1986). The traditional authority structure among clans continues to dominate the internal affairs of the village. However, there is now more social differentiation among individual families, based on success of kin outside the village. Despite these changes, in 2006 the economy within the village remained largely a subsistence economy of fishing and hunting. Aside from school teaching and a handful of government posts, there were no wage labor opportunities within the village.

Wealth measures. Four wealth measures are available for Lamalera: household wealth, sharing-network ties, boat shares, and RS. Household wealth is an indication of the household's access to money and can also be interpreted as a proximate measure of the household's connection to the market economy. Household wealth is measured on an eight-point Mokken scale based on features of residents' homes (see Nolin 2008). Houses are traditionally inherited by the youngest son, unless the house is the lineage's great house, in which case the oldest son has the right of inheritance. However, in 2006 most houses (70%) had been built by their current occupants. Neolocality has long been encouraged by the Church, and a house is considered by most to be a prerequisite for marriage. Young unmarried men often pursue wage labor opportunities in regional towns to save money for the construction of a home. Parents may also contribute to these costs, if able, as may emigrant kin. Remittances from successful emigrant siblings or offspring may also be an important source of cash for later improvements to the house. Correlations between parents' and a child's household wealth may therefore be due to similar access to outside remittances rather than to transfers of wealth from the parents to the child.

Sharing ties to and from a household are an indication of how well the household is buffered against harvest variance. In addition, the people with whom one has established sharing relationships may also be those on whom one can rely for other forms of aid. In this respect, sharing-network ties may be a proxy for one's broader support network. The measure used here sums together the number of other households to whom the focal household usually gives food (its out-degree) and the number of other households from whom the focal household usually receives food (its in-degree). These data were collected by household census in 2006. Secondary shar-

ing in Lamalera is completely discretionary. There are no formally recognized sharing partnerships, such as are found in some other societies, and therefore no sharing roles to inherit. However, parents and children may have similarly sized sharing networks for a number of reasons. First, they are kin to the same people, and since sharing occurs more commonly among kin, this may lead to similar network ties. Second, when children reside near their parents, they may share with the same neighboring nonrelatives. Finally, parents and children have similar access to resources, which may make them similarly attractive to others as sharing partners and similarly able to give to others.

Household boat shares were calculated as the sum of shares in boats held by all residents of a household. Shares can vary in size, depending on the type of shares, the number of holders of that share type, and the prey type caught (see Alvard 2002 for discussion), but here they are counted as single units. Shares in whaling boats remain the primary source of food for most Lamaleran households. Obtaining such shares depends largely on kinship, but being able to contribute to boat maintenance, as well as having the support of other shareholders, may also be important factors. Shares are inherited by the surviving spouse, provided there is one. Otherwise, the shareholder's resident sons divide the share. These rights persist only until share rights are reallocated, which happens periodically, when the boat undergoes refurbishment. Boats are owned by lineages, and adult members of the owning lineage may secure a share at this time by contributing to the costs of refurbishment. Those who already hold a boat share are also expected to contribute, if able, in order to retain their share. Some roles in the boat (boat master, harpooner, master carpenter) are nominally heritable, but if an heir shows no interest, then someone else may take the role.

For Lamalera, RS was defined as the number of offspring surviving to at least 1 year. Reproductive histories were collected in 2006 for all current household heads and their spouses. Respondents were specifically asked about deceased children and were asked to provide ages of death. Infant and child mortality is high in Lamalera, so living offspring aged less than 1 year were discounted by the probability of surviving to 1 year.

Meriam

Ethnographic background. Mer (aka Murray Island) is a small island in Torres Strait, between mainland Australia and Papua New Guinea. Meriam, the indigenous residents of Mer and adjacent islands, have linguistic, genetic, and cultural links to the south coast of Papua New Guinea and to Melanesia more broadly. The island's 1998 population was 430 individuals of Meriam descent, residing in approximately 85 households (plus a handful of temporary non-Meriam residents). The Torres Strait as a whole is administered by the State of Queensland and the Commonwealth of Australia. Although many Meriam men had long been engaged in industries in Australia (especially pearling, sugarcane, and railroads), until about 1975, when Australian welfare payments were first made available to all indigenous Australians, the Meriam on the islands were nearly full-time subsistence horticulturalists and marine foragers. Subsistence revolved around planting tropical yams, bananas, sugarcane, coconuts, and introduced New World crops such as manioc, sweet potatoes, and corn and harvesting marine fish, shellfish, and sea turtles. Today, horticulture is nearly moribund, and carbohydrates and other goods are readily purchased at the community store. Yet fishing, hunting, and shellfish collecting remain critical components of Meriam subsistence economy: mean daily per capita consumption rates in 1998 averaged 630 kilocalories of meat and 40 grams of protein. More than 80% of these calories were supplied by turtle during the nesting season. (For additional ethnographic description, see Beckett 1988; Bliege Bird and Bird 1997; Haddon 1906; Sharp 1993.)

Success in turtle hunting plays an important role in status differences among Meriam men. Hunting of green sea turtles (*Chelonia mydas*) occurs throughout the year but particularly during the nonnesting season (May–September). Hunting is a cooperative, entirely male pursuit with distinct roles: younger men serve as crew members or "jumpers" (*arpeir le*) under the direction of the hunt leaders (*ariemer le*), who are generally older, with more skill and experience, and are ultimately held responsible for the success or failure of hunts. Typically, turtles obtained through hunting (as contrasted with turtles collected on the beach during the nesting season) are distributed to multiple households or to islandwide feasts, and the hunters receive no material recompense (Bliege Bird, Smith, and Bird 2001; Bliege Bird et al. 2002; Smith and Bliege Bird 2000; Smith, Bliege Bird, and Bird 2003).

Wealth measures. Meriam have complex rules of land ownership and inheritance involving both patrilineal clans and some land inheritance by unmarried daughters (or other designated female heirs). However, detailed land ownership data for a representative sample of Meriam are not available; in addition, with the near cessation of horticulture in recent years, the effects of land inheritance on other social and economic variables is likely much diminished. Inheritance of other substantial material property is for the most part a very recent phenomenon, as permanent housing and other durable goods have not been widespread until the past several decades; the prime exception to this would be prized double-outrigger canoes, but these have been displaced by motorboats.

The only wealth measure used here is male RS, measured as number of children alive at time of data collection (1998), regardless of age. It is customary to adjust for early-childhood mortality by measuring only offspring surviving to at least age 5; however, because residents of Mer have access to a staffed medical clinic and fairly rapid air evacuation to a hospital, such mortality is relatively low: ca. 6% cumulative mortality to age 5 (Australian Institute of Health and Welfare 2005). There is some artificial contraception practiced, but incidence data are not available; Meriam birth rates have been

relatively low before access to such technology, for at least a century (Haddon 1901–1935).

Results and Discussion

Wealth Classes and Their Importance

After considerable group discussion, each researcher estimated a value for each of the major wealth classes (embodied, material, and relational) in the population she/he studied. These values, which we label α, are defined as the percentage change in a family's well-being associated with a percentage change in the wealth class in question, holding other wealth classes constant at the average level. The α estimates are fractions that sum to unity, reflecting their derivation from the Cobb-Douglas production function (see Gurven et al. 2010 for details). The estimates for our five focal hunter-gatherer populations are provided in table 4. Note that the α values are not statistical estimates based on measurements but rather judgments of each researcher based on months or years of fieldwork with each respective population.

The researchers generally agreed that relational wealth is of greatest importance, but beyond that there is no clear consensus (table 4). However, the relative α values for embodied and material wealth roughly correspond to the position of these five societies along the mobility/density continuum, with the most mobile populations (Ache, Hadza) having high values for embodied and very low values for material wealth, the sedentary/high-density populations roughly equal α's for these two categories of wealth, and the Ju/'hoansi grouping with the sedentary populations despite their low density and relatively high mobility (table 4). Ju/'hoansi place considerable emphasis on ties to particular homelands (*n!ore*) to which they have foraging rights based on kinship and residence (Lee 1979; Wiessner 2002; also see above), a form of (communal) material wealth; in contrast, Ache and Hadza practice much more open-access foraging on their lands.

Table 4. Estimates of α exponents for hunter-gatherer societies in the project sample

	Wealth class		
Population	Embodied	Material	Relational
Ache	.50	.05	.45
Hadza	.70	.00	.30
Ju/'hoansi	.35	.25	.40
Lamalera	.35	.25	.40
Meriam	.40	.20	.40
Average	.46	.15	.39

Intergenerational Wealth Transmission

As discussed by Bowles, Smith, and Borgerhoff Mulder (2010), we measure intergenerational wealth transmission with the unit-free coefficient β, which estimates the "elasticity" in wealth for parent-offspring pairs, or the percentage change in wealth in the second generation associated with a 1% change in parental wealth. Table 5 presents these wealth-transmission measures by wealth type for each of the five focal populations (plus one measure for Tsimane, otherwise treated in Gurvern et al. 2010). Sample sizes vary substantially, tending to be larger for more easily measured variables, and range from 26 parent-offspring pairs to nearly 200. The method of calculating β requires comparable information on parents and offspring and sometimes sex-specific pairings. Censoring due to death before study or to emigration from the study area leaves many unpaired individuals.

We have eight measures of four types of embodied wealth from five populations: weight, grip strength, RS, and foraging success. In contrast, material wealth is represented by only two measures (shares in whaling-boat harvest and an index of housing quality), both from Lamalera. Similarly, relational wealth is represented by only two measures, exchange (*hxaro*) partners among Ju/'hoansi and food-sharing partners in Lamalera. Given this very uneven representation, it is not reasonable to make statistical comparisons between wealth classes for just the hunter-gatherer cases; instead, see Smith et al. (2010, in this issue), where measures from the full set of societies can be compared.

We can, however, offer interpretations of particular wealth measures in individual societies. With regard to intergenerational transmission of hunting skills, the Ache results show no relationship between fathers' and sons' age-corrected hunting-return rates (fig. 1*A*). This might seem surprising, since men do inherit the genetic component of their father's somatic traits (body size, strength, athleticism, intelligence, etc.), which should have some impact on hunting success. However, all Ache boys hunt with many different men, receive little or no formal instruction from their fathers, and often do not live with biological fathers during teen years. Thus, the lack of a relationship between the hunting success of fathers and that of sons is not a complete surprise. Ache men whom Hill has interviewed suggest that most of their skill came from their own practice during teen years in the forest and from listening to stories by other men as well as from observing the hunting process (but not necessarily with their fathers as models). The similar measure for the Hadza (foraging success) includes gathering as well as hunting and females as well as males (although mother-daughter pairs are excluded from the calculated β, for reasons explained above); it also is close to 0.

In contrast, among the Tsimane we find a quite high β (0.384) for father-son hunting returns, measured as calories gained per hour spent foraging. Young Tsimane males are likely to go hunting with their fathers (and sometimes other male relatives) until they can hunt alone, generally in their late teen years. Thus, there is a greater likelihood that a Tsimane hunter had his father as the prime or even only model for hunting skills in his formative years than is the case for the Ache, and fathers who hunt frequently may be more likely

Table 5. Wealth transmission and inequality measures for hunter-gatherer populations

Wealth class,[a] population	Wealth type (*N* pairs)	β transmission coefficient (SE)	*P* value[b]	Gini coefficient (SE)
Embodied:				
Ache	Hunting returns (49)	.081 (.273)	.768	.237 (.014)
Tsimane	Hunting returns (26)	.384 (.130)	.003	.371 (.037)
Hadza	Foraging returns (39)	.047 (.193)	.808	.339 (.018)
Lamalera	Reproductive success (121)	.161 (.174)	.355	.296 (.012)
Meriam	Reproductive success (91)	.088 (.247)	.722	.298 (.024)
Hadza	Grip strength (196)	−.044 (.050)	.386	.191 (.006)
Ache	Weight (137)	.509 (.128)	.000	.064 (.003)
Hadza	Weight (227)	.305 (.076)	.000	.079 (.002)
Average		.164 (.057)	.007	.215 (.045)
Material:				
Lamalera	Boat shares (121)	.122 (.093)	.190	.474 (.010)
Lamalera	Housing quality (121)	.218 (.099)	.027	.241 (.007)
Average		.170 (.106)	.119	.357 (.084)
Relational:				
Ju/'hoansi	Exchange partners (26)	.208 (.114)	.067	.216 (.028)
Lamalera	Sharing partners (119)	.251 (.052)	.000	.263 (.010)
Average		.229 (.106)	.038	.229 (.106)
Overall average[c]		.19 (.05)	.001	.25 (.04)

[a]See "Ethnographic Sample and Methods" for explanation of the classes "embodied," "material," and "relational."
[b]Calculated from two-tailed tests of hypothesis that true β for a given wealth type or class equals 0.
[c]Overall averages computed from the wealth-class averages, weighted by importance (α) of each wealth class (see table 4).

to have sons who actively hunt. Dyads come from four interfluvial Tsimane villages where hunting is fairly common because of the low population density and the near proximity of remote forest (Gurven, Kaplan, and Gutierrez 2006); since local animal densities and other conditions affect hunting-return rates, the β for Tsimane hunting returns was calculated with village dummy variables to control for any possibility that we were measuring the effects of correlation in location of father-son pairs rather than transmission of ability or skill.

Neither of the β values for RS rise to high levels. The lack of association between parents' and children's RS among Lamalerans has several possible explanations. One is that cooperative acquisition of food, followed by food sharing between households, tends to reduce differences between households in access to food resources. Another possibility is that the lack of association is due to generational changes in fertility patterns. There is some evidence (D. Nolin, unpublished data) that the age at marriage in Lamalera has increased substantially throughout the twentieth century. A secular trend toward delayed reproduction and reduced fertility may reduce any association between parents' and children's RS. While crewmen, and especially harpooners, exhibit higher RS than do nonhunters (Alvard and Gillespie 2004), any man can participate in the fishery. The role of harpooner is nominally heritable, but in practice it can be pursued by any youth who shows promise.

Previous research with the Meriam has shown that being a turtle hunter, and particularly being a hunt leader, is associated with greatly elevated age-specific RS (Smith, Bliege Bird, and Bird 2003). This RS differential is not found for Meriam men who have reputations as particularly good fishermen, political leaders, traditional dancers, "ladies' men," or "hard workers." Among Meriam women, those with reputations as "hardworking" do have somewhat elevated mean RS, but these women are disproportionately married to turtle hunters (Smith, Bliege Bird, and Bird 2003). The estimated transmission coefficient for Meriam parent-child RS is effectively nil (table 5). This agrees with previous findings that pairs of Meriam brothers of roughly the same age in which only one is a turtle hunter show the same divergence in RS as the full set of Meriam hunters versus nonhunters, and that patrilineage does not predict hunting role (Smith, Bliege Bird, and Bird 2003). The conclusion seems to be that whatever combination of abilities, experience, and motivation leads some Meriam men to succeed in turtle hunting or other RS-correlated attributes does not tend to be passed from parent to offspring. Similarly, differences in female RS in this population do not seem to correlate with parentage. Given the relatively egalitarian nature of Meriam social life and the emphasis on personal achievement, these results are as might be expected. Although the sample size is small (91 pairs, smallest of the whole set of 12 RS measures in the project), the low β value is also found in most other cases where this wealth type was measured (see other papers in this special section). However, it is intriguing that Hill and Hurtado (1996: 414) found a substantial correlation in RS for sons and their parents (but not for daughters); sex-specific transmission of RS should be explored in future studies.

Our two β measures for body weight show a substantial degree of parent-child transmission (about 0.3 for Hadza,

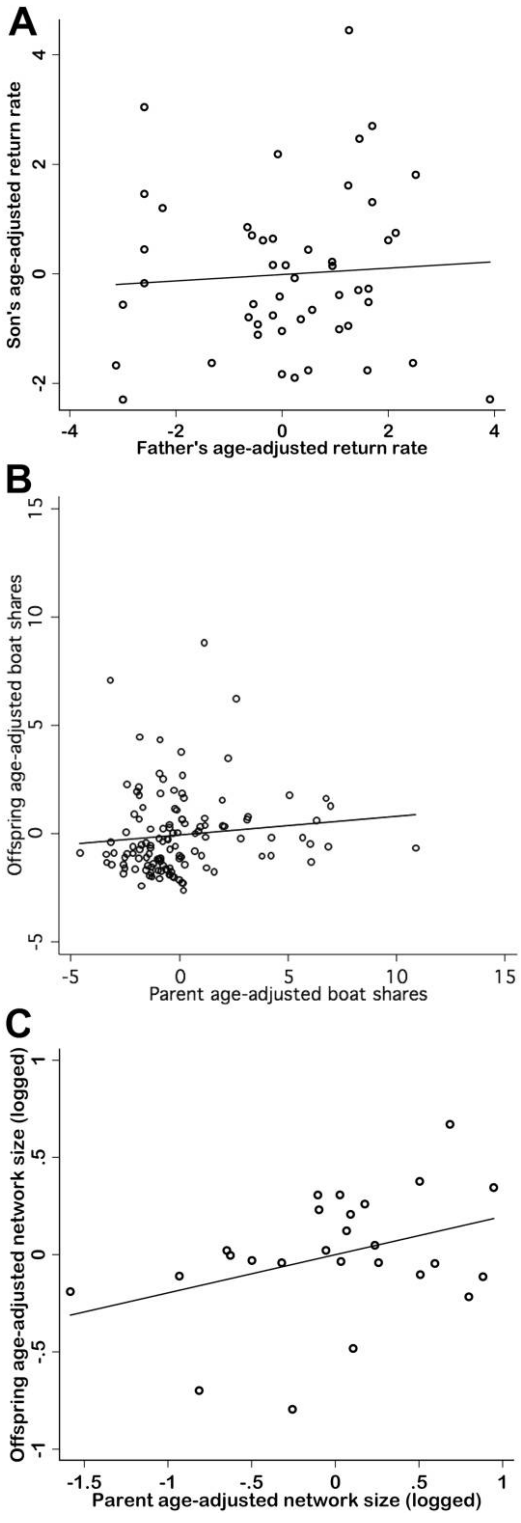

Figure 1. Parent-offspring wealth data for three representative cases. *A*, Ache hunting success ($\beta = 0.08$, embodied wealth); *B*, Lamalera boat shares ($\beta = 0.12$, material wealth); *C*, Ju/'hoansi exchange partners ($\beta = 0.21$, relational wealth). The line in each graph shows the underlying linear regression on which the β estimates are based.

about 0.5 for Ache), the pattern also found in other populations measured in this project. Given the considerable degree of interhousehold food sharing among Ache (Kaplan and Hill 1985) and Hadza (Sherry and Marlowe 2007) and the low β for Ache hunting success (<0.1), the parent-child weight relationship in these two populations may be substantially due to genetic inheritance of disease resistance or some other unmeasured variable.

In the category of material wealth, our only two measures come from the same population, the whaling village of Lamalera, Indonesia. Household wealth exhibits moderate association between parents and children. The index of wealth here is based on features of household construction, improvements that generally require materials that must be purchased with cash. However, there is very little opportunity for wage labor in the village (aside from teaching or a few government posts). One way for men (especially young unmarried men) to acquire money is to take occasional temporary construction jobs in the district capitol. However, another important source of cash may be remittances from other close family members who have found permanent jobs outside the village. Insofar as both parents and children have access to the same sources of remittance money (e.g., from the same son/brother), they may manifest similar levels of household wealth. In this case, wealth may be as much an indicator of social capital as of material possessions. In contrast, shares that Lamalerans own in whaling-boat (*téna*) harvests do not show a significant intergenerational elasticity, and the estimated effect size is rather small (fig. 1*B*). This may be because parental influence is less important than more general support within one's lineage for securing shares in the lineage's *téna*. Other ways of securing boat shares include seeking shares from affinal lineages or through repeated, long-term participation in the crew of another lineage's boat. Parental influence is likely minimal in either case.

Finally, we have two measures of relational wealth. There is a moderate relationship ($\beta \approx 0.2$) between Ju/'hoansi parents and offspring in the size of *hxaro* spheres (fig. 1*C*). This relationship is dependent on two factors. The first is the size and strength of spheres of *hxaro* that parents maintained until old age for their children to inherit. Approximately 25% of *hxaro* partnerships were passed from parents to children as parents aged or upon their deaths (see "Wealth measures" in "Ju/'hoansi"; also Wiessner 1986). The second factor is social competence. Some children were competent to "replace" parents who had an active social sphere; others were not. Few children of parents with narrow *hxaro* spheres expanded their spheres far beyond those of their parents (i.e., "upward mobility" in *hxaro* partnerships was infrequent).

The highest β value for Lamalera is in food-sharing partnerships. Sharing ties are more common between geographically and genealogically closer households (Nolin 2008). Because parents and children share a common set of kin, they are likely to share many of the same partners, and their total number of partners may vary with the number of close kin

in the village. The tendency for children to reside near their parents is mild in Lamalera, but when it does occur parents and children are likely to have sharing ties to the same residentially close neighbors. Even when children establish households farther away, they may maintain sharing relationships with neighbors near their natal household. Social relationships such as food-sharing partnerships differ from other types of wealth in that possession by the parents is not mutually exclusive of possession by the children. Grown children can have established sharing relationships with the same households as their parents. In fact, parents may be instrumental in helping their children establish these types of social relationships as they enter early adulthood (Scelza, forthcoming).

Wealth Inequality

Although our primary focus in this project is on intergenerational wealth transmission, we have an interest in the corresponding degree of wealth inequality and how this might vary by wealth type, production system, and other factors. Table 5 lists the Gini coefficient for each wealth type in our sample. We use the Gini because of its wide usage, unit-free definition, and intuitive meaning: the coefficient can range from 0 (complete equality) to 1 (virtually all wealth held by a single household). For comparison, Ginis of monetary income range from about 0.25 in several Scandinavian countries to more than 0.6 in some poor countries, with the United States at about 0.41 (UNDP 2009). Most Ginis for our 11 wealth types are in the moderate range, few being less than 0.1 or greater than 0.4 (table 5); the lowest Ginis are those for weight (both <0.1), and the highest is for Lamaleran boat shares (0.47). There are too few measures of material and relational wealth to discern a pattern by wealth class (but see Smith et al. 2010).

To characterize an overall measure of wealth inequality for the sample populations, we weight the average Gini coefficient for each wealth class (table 5) by the average α (importance for well-being) of that wealth class (table 4). The resulting estimate equals 0.25, the same as the simple arithmetic average of the Ginis in table 5.

Conclusions

What Shapes Intergenerational Wealth Transfer?

The analyses presented above reveal certain patterns regarding wealth (broadly defined) in our sample of hunter-gatherer populations. One is that certain types of wealth are more likely than others to be transmitted to offspring. Of course, the patterns we see could be spurious, given our small number of cases. But the replication of some of these patterns across populations, and indeed across production systems (as discussed in other papers in this special section), makes that less likely. For example, adult body weight is highly correlated between parents and offspring in our two cases, and similar values in nonforager populations are reported in Gurven et al. (2010). Similarly, our two measures of relational wealth, involving exchange partners, display moderate values ($\beta >$ 0.2) that are also echoed in most of the other populations analyzed in this project (horticultural: Gurven et al. 2010; agricultural: Shenk et al. 2010).

Yet similar levels of intergenerational transmission do not imply similar causal mechanisms. Weight correlations reflect some mix of genetic and environmental causes. With variation in food intake effectively muted by the widespread food sharing found in our populations (and most other hunter-gatherers), genetic variation might be free to play a larger role in shaping adult weight. In the case of exchange partners, there may be some relevant genetic variation (e.g., in determinants of personality), but this likely takes a back seat to social and demographic variables such as the number of close kin one happens to have alive (important for at least the Ju/'hoansi case) or the social position of one's parents.

Some other patterns of wealth transmission are discordant between our five populations. The transmission coefficient for long-term hunting-return rates is quite high among the Tsimane ($\beta = 0.38$) but close to 0 for the Ache. Since hunting success has been found to predict RS in most hunter-gatherer populations where the data have been analyzed, including all six of the populations treated in this paper (reviewed in Gurven and von Rueden 2006; Smith 2004), determining whether the Tsimane pattern or the Ache one is more widespread is of considerable interest.

As for RS itself, we treat it here (and elsewhere in this special section) as a form of wealth, but it could justifiably be considered an outcome of wealth transmission (or consumption) as well, shaped by ecological, political economic, and evolutionary factors. In any case, the transmission coefficients for our cases are quite low, matching those of most of the RS data from other populations analyzed in this special section. Interestingly, a recent study analyzing genetic (mitochondrial DNA) data from a set of thirty-seven populations concludes that matrilineal fertility inheritance is more frequent in hunter-gatherer populations than in agricultural ones (Blum et al. 2006). The authors speculate that in hunter-gatherer populations, individuals belonging to large kin networks may benefit from stronger social support, resulting in more offspring. This hypothesis is consistent with ethnographic analyses of Ju/'hoansi by Draper and Hames (2000) and Wiessner (2002), and it links to recent theory about the evolutionary dynamics of cooperative breeding (Clutton-Brock 2002; Hrdy 2005; Kokko, Johnstone, and Wright 2002).

How Egalitarian Are Hunter-Gatherers?

Hunter-gatherers have long been anthropology's favorite exemplar of whatever social, political, or moral principle an analyst wishes to support. The twists and turns in this intellectual history have been ably reviewed elsewhere (e.g., Kelly 1995; Marlowe 2005; Winterhalder 1993). We wish to avoid

any suggestion of endorsing a new stereotype for what is inherently a diverse set of societies. However, we do think that our findings support a reassessment of the view that hunter-gatherers (with a few obvious exceptions) are characterized by pervasive equality in wealth and life chances.

The intergenerational wealth-transmission coefficients estimated here range from values that are very low and statistically indistinguishable from 0 to ones near or above 0.4. Let us focus on intermediate values of $\beta \approx 0.25$, close to several measures (table 5). While far below a perfect transmission rate of 1.0, this measure indicates a fairly high bias in the life chances according to the parent's wealth. Indeed, as detailed by Bowles, Smith, and Borgerhoff Mulder (2010), $\beta = 0.25$ implies that a child born into the top wealth decile of the population is five times as likely to remain in the top wealth decile as a child whose parents were in the bottom decile. Even a β of 0.1 implies that a child born into the top wealth decile is twice as likely to remain there as one born into the bottom decile. These results suggest that in hunter-gatherer populations, even those with extensive food sharing and other leveling devices (Cashdan 1980), the offspring of those better off will tend to remain so, and conversely.

How much wealth inequality actually exists in these populations? The Gini coefficients listed in table 5 are low, compared to those of contemporary societies and even those of agricultural and pastoral populations (see other papers in this special section), but they are far from negligible. Excluding the low coefficients for weight, the Ginis range from ≈0.2 to ≈0.5, and even when weight is included the α-weighted average is 0.25 (table 5). This value is the same as the income inequality in contemporary Denmark (0.25), the country with lowest such value in recent years (UNDP 2009). Thus, to the extent that our measures for this set of foragers are representative, wealth inequality is moderate: that is to say, very low by current world standards but far from a state of "primitive communism" (cf. Lee 1988).

The combined picture from the intergenerational transmission (β) and inequality (Gini) estimates suggests that we may need to rethink the conventional portrayal of foragers as highly egalitarian and unconcerned with wealth. Even classic examples of hunter-gatherer society display more inequality than is widely appreciated. For example, evidence indicates that leadership was much stronger among the Ju/'hoansi in the past, before the Bantu arrived, with the best foraging areas (*n!ore*) held by strong families (Wiessner 2002), and the language has distinct words for poor, ordinary, and rich.

What Remains to Be Done?

This research raises many more questions than it answers, a commonplace that is emphatically true here. Because of space limitations, we can mention only the most pressing of these. First, we clearly need more wealth measures, particularly for material and relational wealth classes. Given the high importance we assign to relational wealth ($\alpha \approx 0.4$) and the ethnographic evidence of its impact on status, this wealth class is especially in need of further detailed study and analysis.

Second, we need more work focused on the development of institutionalized inequality in hunter-gatherers. For historic reasons, there are no extant "complex" foraging societies of the sort once found in places such as the Northwest Coast, and hence we had no hope of including a representative in this project. But the findings reported here do offer potential insights into such societies and how they might have developed (under the right socioecological conditions) from less hierarchical systems. In particular, we need to mine the results of this project to address the question of what conditions allow wealth to be monopolized. We hypothesize that there are at least two main differences between establishing inequalities on the basis of social ties and doing so via material property. First, one can successfully pass on material property to a child who is not very bright or competent, and others can help him or her manage the advantage, but this is generally not possible with relational wealth. Second, it is much harder to construct institutions to transmit social ties and knowledge than to do so for material wealth. To test these (and related hypotheses), we will need additional data sets detailing the degree of intergenerational wealth transmission for various forms of wealth and the processes that support or constrain such transmission.

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