Chapter Five

Neoevolutionary Approaches to Human Kinship

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This chapter aims to introduce readers to neoevolutionary theories and what they have contributed to the study of human kinship. This is a relatively new and controversial theoretical orientation and has few proponents within cultural anthropology. I hope to demonstrate that the few researchers using this theoretical orientation have made substantial contributions to our understanding of human kinship.

A broad rather than narrow conceptualization of kinship is used in this chapter, which means topics such as the family, descent, and marriage will be discussed. The chapter focuses on kinship topics that are often discussed in introductory cultural anthropology textbooks in the hope that the ideas might be incorporated into anthropology courses. There are many other interesting and viable topics in kinship studies (e.g., fictive and ritual kinship), several of which are included in this book, but they are not considered here because of limited space. Also, while kinship is "cultural" in the sense that it is symbolic and transmitted nongenetically from generation to generation, this does not mean kinship is purely cultural; to the contrary, this chapter aims to demonstrate how natural and sexual selection influence the nature and shape of kinship.

What Is "Neo" Evolutionary Theory?

Most biological anthropologists think of themselves as evolutionary and even many cultural anthropologists feel they take an evolutionary approach to culture when they discuss bands, tribes, chiefdoms, and so forth. Keesing (1975) titled the first chapter of his book on kinship "Kinship in Evolutionary Perspective," but he does not use any of the neoevolutionary theories discussed in this chapter. Most neoevolutionary researchers think of themselves as simply

"evolutionary," but "neo" is used in this chapter to identify researchers who use a particular set of relatively recent contributions to Darwin's theories of natural and sexual selection.

Before describing some of the neoevolutionary theories, it is important to discuss a few basic concepts that are common to this theoretical orientation. First, the unit of natural selection and the focus of neoevolutionary studies is the individual rather than the group. Humans live in groups and have cultural practices and beliefs because the group enhances the survival and reproductive fitness of individuals. Second, neoevolutionists are interested in ultimate rather than proximate kinds of explanations. Ultimate explanations focus on how particular kin relationships enhance the reproductive fitness of individuals, while proximate explanations focus on social, psychological, hormonal, or cultural factors. They are different kinds of explanations and they are not necessarily contradictory or mutually exclusive. A cultural anthropologist may explain male violence against women as a result of patriarchal social structures, or a biopsychologist may explain it as a result of higher levels of male testosterone. A neoevolutionist, on the other hand, would be interested in explaining *why* particular male-dominated structures exist or *why* testosterone evolved to increase male violence, and how did the structures or hormones increase an individual's reproductive fitness. They are different levels of explanation and are not necessarily contrary to one another.

Kin Selection/Inclusive Fitness

According to Darwin (1859), the measure of "fitness" in natural and sexual selection was the number of offspring an individual left behind. Hamilton (1964) expanded this concept and indicated that an individual's genes existed beyond self and offspring. An individual can enhance his or her reproductive fitness by helping any individual that shares genes with him or her (nieces, nephews, cousins). The degree of help/altruism one provides to another is predicted to be linked to the degree of genetic relatedness. Several examples of kin selection are provided in chapter 4 of this book.

Parental Investment

Darwin (1859) explained the horns, antlers, and bright feathers in particular species as the result of sexual selection rather than natural selection. Natural selection explained how individuals adapted to a particular natural and social environment, while sexual selection explained competition among members of one sex for access to members of the opposite sex. The large elk antlers were the result of males competing among themselves for access to females. Trivers (1972) expanded on sexual selection by pointing out the importance of differential levels of parental investment (PI). In species in which one sex invests more than the other in offspring, this sex will become a limiting resource, and members of the other sex (males, in most birds and mammals) will compete among themselves for access to the first (usually females). Parental investment is defined as anything a parent provides to offspring that increases the offspring's chances of reproductive success at the cost of limiting the parent's ability to invest in future offspring (i.e., this includes anything from teaching, providing, protecting, or caregiving to providing inheritance and social-emotional support to a spouse). Greater female parental investment results in higher reproductive variance among males than females (number of offspring). Greater male reproductive variance means that males successful in competition will have many offspring, while males that are not as successful may not have any offspring. Females, of course, compete among themselves, which leads to reproductive variance as well, but because of differential parental investment, the variability in reproductive success is predicted to be less than that of males (i.e., most females will have offspring). In species with greater female investment, female choice is predicted to guide the course of male evolution through the selection of certain males.

Sex Ratio

Sex ratio theory is an extension of parental investment theory. Trivers and Willard (1973) pointed out that because males are more variable than females in their reproductive success, parents in good environments are predicted to vary the sex ratio of their offspring in favor of males so as to maximize the number of offspring in the third generation. Parents in poor environments are expected to want more females, since males are likely to leave no offspring.

Reciprocal Altruism

Darwin's theory focused on blood relatives, while recent theoretical contributions by Axelrod (1984) and others (e.g., Trivers 1971) indicated reciprocal relationships with nongenetically related individuals can lead to increased reproductive success. This is commonly referred to as tit-for-tat theory or "I'll scratch your back if you scratch mine." Two conditions are necessary for reciprocal altruism to take place: (1) high likelihood that you will be able to recognize and see the individual again (i.e., he or she lives next door, is a roommate, or works with you), and (2) expectation that benefits will exceed costs over time. Friendships, alliances, and cooperatives are just a few examples of reciprocal altruism and are especially common in contemporary stratified societies.

Life History

Life history theory (LHT) is also a recent extension of Darwinian theory. One commonly used model (Williams 1966; Hirshfield and Tinkle 1975)

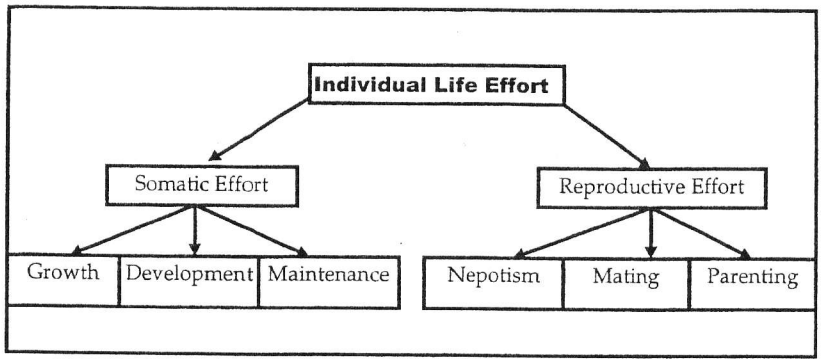

Figure 5.1 Trade-Offs in Life History Theory

identifies two conceptually distinct categories—somatic and reproductive effort—that an individual engages in if she or he is to be biologically successful (see figure 5.1). Somatic effort refers to the risks and costs involved to ensure the physical survival of the individual—having shelter, protection from predators and conspecifics, obtaining food, keeping healthy, and so forth. Reproductive effort has to do with getting copies of one's self into subsequent generations. It is divided into three broad categories—parental effort (rearing children), mating effort (attracting, keeping, and guarding a spouse), and nepotistic effort (helping relatives besides one's own children). Life history theorists focus on identifying the trade-offs (costs, benefits) of these various activities. The two primary trade-offs LHT tries to evaluate are (1) whether to have offspring now or in the future, and (2) whether to have many offspring with minimal investment or have few offspring with substantial investment (i.e., quality versus quantity of offspring). Most of the human research has focused on trade-offs between mating and parenting efforts (Hewlett 1992).

Finally, it is important to remember that all of the above neoevolutionary theories were developed to explain cross-species behaviors; they are not anthropocentric. All three of the theoretical styles described in the next section employ the theories mentioned above.

Diversity within Neoevolutionary Thought

Table 5.1 summarizes some of the theoretical diversity within neoevolutionary thought (modified from Smith 2000). In the early 1980s, clear differences developed between neoevolutionary researchers. Napoleon Chagnon, Eric Smith, Kristen Hawkes, Monique Borgerhoff Mulder, Kim Hill, and Magdi Hurtado were conducting quantitative behavioral field studies with foragers, pastoralists, and horticulturalists and demonstrated that many aspects of cultural life—kinship, family, and subsistence systems—were fitness maximizing activities.

Table 5.1 Diversity of Neoevolutionary Approaches

	Evolutionary Psychology	Behavioral (Evolutionary) Ecology	Dual Transmission
Tries to explain	Psychological predispositions, human universals	Behavioral strategies, reproductive trade-offs in different environments	Cultural diversity, cultural change, gene-culture interactions
Key constraints	Cognitive mechanisms of modules, genetic	Ecological, material	Cultural mechanisms, information
Time for adaptive change to take place	Long-term (genetic)	Short-term (phenotypic)	Varies by mechanism (cultural)
Contemporary adaptiveness	Low	High	Varies by mechanism
Primary methods	Survey, interviews in Euroamerican cultures	Field observations in small scale cultures	Mathematical modeling
View of culture	Culture is the manufactured product of evolved psychological mechanisms	Culture always adaptive, no power to co-direct genetic evolution	Culture can drive or co-direct genetic evolution
Kinship systems	Based on specific genetically-based human universals (e.g. kin selection)	Kinship systems maximize reproductive fitness of individuals in particular environments	Conservative cultural mechanisms influence the current distribution of kinship systems

NOTE: MODIFIED VERSION OF SMITH (2000).

Don Symons, Martin Daly, Margo Wilson, John Tooby, and Leda Cosmides, on the other hand, were working with contemporary complex societies (often with college undergrads using pencil and paper questionnaires) and were critical of the "fitness maximizing" researchers because the research did not contribute to a better understanding of human nature and cognition. Demonstrating that a particular cultural behavior increased reproductive success was not important to this group. They wanted to identify universal modules or mechanisms of mind that were selected for in the Environment of Evolutionary Adaptation (EEA), that is, the Paleolithic hunting-gathering environment of evolutionary adaptation. This group eventually became known as evolutionary psychologists (EPs) and distinguished themselves from behavioral ecologists (BEs) who viewed the mind as a general-purpose fitness maximizing organism. This split

was occurring while I was a graduate student at the University of California, Santa Barbara, and Symons (an early EP) would conduct seminars on "Why I Am Not a Sociobiologist" to distinguish his interests from those of Smith, Hawkes, and other BEs. It is interesting that Chagnon, one of the first BEs, had an office right across the hall from Symons, and he thought Chagnon's work was consistent with EP—see Symons (1992) for his critique of BEs.

The term "sociobiology" has been dropped from use in most evolutionary studies. For instance, the journal of the Evolution and Human Behavior Society recently changed its name from *Ethology and Sociobiology* to *Evolution and Human Behavior.* There were several reasons for the change: (1) the term evolutionary biology existed before sociobiology so there was no need for a new term, (2) sociobiology focused on hard-wired aspects of behavior, while many neoevolutionists (BEs) viewed human behavior as flexible and adaptive to different environments, and (3) sociobiology generated negative images (e.g., tomato- and egg-throwing at Irv DeVore and other "sociobiologists" at American Anthropological Association meetings in 1977).

The dual transmission theorists (DTs) are the smallest group of researchers and are primarily geneticists or biological anthropologists (Cavalli Sforza and Feldman 1981; Boyd and Richerson 1985; Durham 1992). While they are referred to as dual (gene-culture) transmission theorists, most of their work has focused on the nature of culture and its impact on genes. Because they have background in population genetics, they realize that particular mechanisms of genetic transmission can lead to genetic maladaptation (e.g., mechanisms of Mendelian genetics produce maladaptive genotypes). For instance, if parents in West Africa are heterozygous for the sickle-cell trait, they have a 25 percent chance of producing an offspring that is homozygous for the sickle-cell trait, which leads to death at an early age. If genetic mechanisms can produce maladaptation, it seems reasonable to hypothesize that cultural mechanisms could produce maladaptive patterns as well. Consequently, most of the DTs' research has focused on identifying cultural transmission mechanisms and how they shaped the distribution and diversity of cultural beliefs and practices. Their use of genetic analogies has led them to call culture beliefs and practices "memes."

In order to better understand the stylistic differences, a brief description of how each style views polyandry may be useful. Polyandry occurs in the highlands of Tibet and Nepal where arable farming land is limited. One woman marries brothers, in part, so the arable land is not divided between brothers and each brother takes on a different economic task—farming, herding, or trading. BEs have demonstrated that brothers with equal access to their wife in common do not show a loss of reproductive fitness when compared to a single brother marrying monogamously (Crook and Crook 1988). EPs argue that while polyandry might be adaptive in the contemporary environment, there is no adaptive design to polyandry that was selected for in the EEA. It is not an adaptive mechanism of the mind that has gone through tens of thousands of years of selection. From an

EP point of view, the results of the BE study do not provide insight into human nature. DTs, on the other hand, would point out that there are other similar highland environments where one does not find polyandry so it is important to examine the history and transmission mechanisms of this belief (meme).

Table 5.1 demonstrates that there is disagreement between groups as to what is important to study and how or where to conduct an evolutionary study. But each style offers alternative and not necessarily contradictory insights into human behavior.

Neoevolutionary Contributions to the Study of Human Kinship

Behavioral Ecology

This group of neoevolutionary anthropologists view kinship systems as mechanisms individuals utilize to adapt to a variety of demographic, social, and natural environments. Early studies focused on male reproductive strategies. For instance, Hartung (1976) hypothesized that in societies where wealth (e.g., land, cattle, and the like) can be accumulated, males are likely to transmit it to sons rather than to daughters because there is greater reproductive variance in males than in females (see PI theory). Sons can have many more children than daughters, so the return on patrilineal inheritance is greater than matrilineal or bilateral inheritance. Even in the more complex societies with bilateral descent, the bulk of the productive property, such as land, money, and livestock, tended to be inherited by males rather than females. Inheritance of the throne, the family business, farm, or trade is often by males. In today's environment where a quality education is central to future fitness, there is often greater investment in sons rather than daughters, especially in developing countries such as Africa and Asia.

Matrilineal inheritance on the other hand (Hartung 1985) is hypothesized to be linked to social environments where paternity uncertainty is high. Extramarital affairs and divorce are common in these societies, which hypothetically leads men to invest in their sister's children, the sister's son in particular, where he is sure he is investing in his inclusive fitness rather than in his own children where paternity may not be clear.

Unilineal descent is also linked to exogamy (i.e., to marry outside of the clan or lineage), prescriptive cross-cousin marriage, and bride wealth. Van den Berghe (1983) and Fox (1967) hypothesized that this pattern of marrying close relatives (cousins) outside of one's own clan (cross-cousins) was part of a male strategy to develop larger, stable, and powerful political and military groups. This is consistent with other anthropological hypotheses about the origin of unilineal descent groups (Service 1966), but it is interesting from an evolutionary perspective because it is a system that combines a pattern of kin selection (i.e., marrying cousins) with reciprocal altruism (alliances with nonkin in the clan) that is quite distinct from that among most

hunter-gatherers. Most hunter-gatherers are bilateral, usually want individuals to marry far away, disapprove of all cousin marriages, and do not have cross-cutting alliances that tie people together outside of the band. Genetic studies support that different patterns such as inbreeding (i.e., average degree of relatedness) is greater in unilineal horticultural societies than it is among bilateral hunting and gathering societies (MacDonald and Hewlett 1999).

Bride wealth and polygyny are also associated with social environments where wealth can be accumulated. Once humans domesticated plants and animals and could develop a surplus, the first forms of investment of this wealth were reproductive. Men and their male kinsmen sought to control the reproductive power of women since women are the ultimate scarce resource for men (van den Berhe 1983). Two types of polygyny are described by BEs: mate control and resource control (Flinn and Low 1986). The first type occurs in environments where material resources are rather evenly distributed between community members, human population densities are low, and it does not take much time or energy to make a living. The Yanomamo and some hunter-gatherers, such as Australian Aborigines, are examples of this type of polygyny; differential male resources are not important except where males exert considerable effort to control their mates and their male competition. This type of polygyny is commonly portrayed in cartoons where a caveman drags off a woman by her hair and uses a large club to fend off other men. But the most common type of polygyny in the ethnographic record is called resource-control polygyny. This is where resources critical to female reproductive fitness can be monopolized by males and there is differential resource holding power of males (Emlen and Oring 1977). Borgerhoff Mulder (1990) found that East African Kipsigis women were much more likely to select men with large plots of land, suggesting that female choice contributes to polygyny, and several other studies have shown that throughout human history, men who controlled vast sources of wealth often acquired a large number of mates (Betzig 1992). Borgerhoff Mulder (1988) also found that men's families paid higher bride wealth for younger and heavier women and lower bride wealth for women who had previously given birth to children.

Dowry, on the other hand, occurs in highly stratified societies with socially imposed monogamy (and a few highly stratified polygynous societies) and has been viewed as a form of female-female competition for high status males (Gaulin and Boster 1990). Dowry is a means of passing property to one's daughters before death and is thus an investment in the fitness of daughters. Cashdan (1996) also pointed out that females in these societies are also highly dependent upon male investment (i.e., men are important providers) and that greater independence of women would discourage dowry payment. Dickemann (1979) examined stratified societies in Europe and Asia and found hypergamous (women marrying up in class/status) dowry common in middle to upper class/castes along with greater parental investment in sons rather than daughters (e.g., greater likelihood of female infanticide), while bride wealth and greater investment in daughters was common in lower class/castes. This is consistent with the predictions of the Trivers-Willard sex ratio theory described above.

Smuts (1994) has suggested that patriarchy is especially pronounced in humans because of accumulation of wealth and stratification. Once domestication took place, males tended to control the resources that females needed to survive. Stratification enabled powerful males to dominate other males, which meant less interference when the dominant males coerced and controlled females. She points out that the human patriarchal system elaborated on mammalian and higher primate patterns where males and females have different reproductive interests, females tend to choose males who control resources, and males are philopatric (patrilocal).

While many kinship, family, and descent patterns may be adaptive, neoevolutionists are quick to point out that it is necessary to examine kinship systems from an individual's perspective—how they actually work on the ground. Patrilineal descent and cross-cousin marriage may be preferred but this does not mean everyone plays by the rules. Chagnon (1988), an early and controversial proponent of neoevolutionary approaches to kinship, went to great lengths to point out how humans are rule-breakers more than they are rule-makers. Individuals manipulate systems to their own reproductive advantage and environmental situations. He found that: (1) Yanomamo men manipulate their kinship terminologies for female kin in ways to create more potential mates (i.e., they reclassified individuals so they would have more cross-cousins to marry), (2) females that were redefined as wives (cross-cousins) were primarily women in a younger generation and therefore had greater reproductive value, and (3) subadult males tended to reclassify females into the mother category, which was probably important for their reproductive fitness.

Most of the above described studies focus on male reproductive strategies or how male reproductive variance influences kinship structures. Recent work has given more attention to female reproductive strategies. Hawkes's grandmother and show-off hypotheses are important contributions to kinship studies because they question many of the assumptions of the "hunting hypothesis" (Hawkes et al. 2000). This hypothesis suggests that many aspects of human social organization (patrilocality, sharing, monogamy, nuclear family) were consequences of male big game hunting. Males hunted big game to provide for the nuclear family; from a life history perspective, they were investing energy into parental effort (see figure 5.1). The research by Hawkes et al. suggests that fathers/males hunt large game animals to show off to females rather than actually provide for the nuclear family. Among most hunter-gatherers, prey that are widely shared with others are usually asynchronously acquired, provide large amounts of meat, and are associated with high risk of failure. Male hunters who target these widely shared game animals do not gain by providing more for themselves or their family, but by gaining favorable attention or increased mating opportunities. The hunter's family receives little of

the meat acquired because it is shared with everyone else in camp. Consequently, women, grandmothers in particular, are hypothesized to be crucial providers for young children rather than the fathers. The fathers' big game hunting is a mating effort rather than a parenting effort. This leads to a dramatically different view of human social organization where matrilocality and female provisioning are central, and the nuclear family and monogamy are not as important.

Discussions of father–child relationships are central to kinship studies in anthropology because they hypothetically demonstrate the importance of culture over biology in understanding kinship systems. Malinowski (1913) was one of the first to make a distinction in two types of fathers among Australian Aborigines—social (pater) and biological (genitor). The social/legal father is the man who is believed by members of his community to have impregnated the child's mother or to have contributed in some other way to the being of the child, while the biological father is the genetic father. The genetic father is also often socially recognized and a person through whom the child may claim kinship with other people. Social fathers are common in many cultures around the world—Australian Aboriginal, Aché, Bari, Nuer, Toda, Nayar, Nyimba, Mehinaku, Trobriand Islanders, and Andaman Islanders, to mention some of the better-known cultures. The social father can be the man who paid the bride wealth, the father who lives and sleeps with the mother, or the man the mother identifies as a legal father.

What is the role of social fathers? Hypotheses from cultural anthropologists are generally consistent with evolutionary theory in that social fathers exist because it is not always clear who the biological father is, while mothers are always certain. This has led kinship specialists to state that the mother and her dependent children are the basic unit of all kinship systems (Fox 1967; Fortes 1958). But recent cross-cultural and cross-species studies by Hrdy (1999) suggest that social fatherhood is a female reproductive strategy. It is a way to confuse paternity so that a few men feel like they have some connection to the child. This increases male investment in the mother and her offspring, therefore enhancing the mother's reproductive fitness. Hrdy predicted that the many fathers strategy is especially likely in environments where resources necessary for survival are scarce or highly variable (e.g., particular natural environments, lower socioeconomic contexts). From Hrdy's perspective, polyandry (i.e., women mating with several men) is much more common than is recognized in anthropology textbooks.

This is just a sampling of studies from an evolutionary ecology perspective. Flinn and Low (1986) discussed the reproductive advantages of different marriage systems and kinship terminologies in different socioecologies, Betzig's (1989) cross-cultural study of divorce indicated that the reasons for divorce are consistent with evolutionary theory (e.g., adultery, infertility, lack of resources), and Borgerhoff Mulder (1990) described the environmental contexts of polygyny.

Evolutionary Psychology

EPs have not paid particular attention to kinship systems. Many are psychologists who conduct research with Euro-American populations, so they have no training in traditional interest kinship systems. EPs are also more interested in describing universal patterns rather than cultural diversity in topics such as kinship and the family. EPs would argue that many of the patterns of BEs described in the previous section are consequences of evolved mechanisms that have shaped culture. These evolved mechanisms include: (1) the ability to identify kin, (2) males' ability to evaluate paternity, (3) males' ability for sexual jealousy, (4) child–caregiver attachment, (5) females' ability to extract male investment (either honestly or through deception), (6) female desire for males with resources, and (7) male desire for young females with high reproductive value. EPs view these as evolved mechanisms because the men or women who had these abilities or characteristics left more of their genes behind in the EEA than those without these features. Therefore, matrilineal descent is based upon males' evolved algorithm to determine that whenever they are unlikely to be the fathers, it is better to invest in sisters' children. Hrdy's (1999) many fathers hypothesis is based upon the assumption that females have evolved mechanisms to obtain male parental investment. Another interesting study by Hagen (in press) identifies another mechanism by which females try to extract male investment—postpartum depression (PPD). His study suggests that the degree of PPD is linked to the degree of father investment (or lack thereof). The depression is a signal that if the father does not start to invest more (providing, caregiving, and socially-emotionally supporting the mother) the mother is going to withdraw her investment in his child.

From an EP perspective, it is important to identify and understand these evolved mechanisms if one wants to understand kinship systems. There are no genes for unilineal descent or different kinship terminologies, but there are evolved mechanisms that contribute to observed cultural patterns.

Dual Transmission

BEs try to demonstrate that kinship and marriage structures, such as patrilineal inheritance and polyandry, are adaptive in particular environments, while DTs try to understand how mechanisms of transmission might lead to coevolution or independent patterning of kinship structures. For instance, if polyandry is adaptive to a highland environment, why is it not found in the highlands of the New World (Bourguignon and Greenbaum 1973)? Many times a statistical relationship can be found between two variables because most of the cases exist in one area of the world. DTs are interested in explaining the distribution of kinship and other structures across the landscape and trying to determine whether they are adaptive to particular environments or whether they are the consequence of other, culturally-specific processes.

Each DT theorist has identified and mathematically modeled several cultural transmission mechanisms, but to demonstrate the contributions of DTs to kinship studies, we will limit our review to those modeled by Cavalli Sforza and Feldman (table 5.2). Cultural transmission from parent to child is called vertical and is the closest to biological transmission; like biological transmission, it is highly conservative and may maintain the status quo, including all the individual variation in existence. With this mode of transmission there is little difficulty accepting an innovation at the individual level; children imitate and are especially receptive, but the innovation will be very slow to spread to others in the population unless other modes of transmission are employed along with parent-to-child transmission. This type of transmission is common to most small-scale cultures (Hewlett and Cavalli Sforza 1988).

A more typically "cultural" mode of transmission is horizontal or contagious, in which transmission is between any two individuals irrespective of their relationship. This is very similar to the transmission of infectious diseases. The spread can be fast if contacts with the transmitters and transmittee are frequent. If transmission is one to many, communication is highly efficient, and if acceptance follows, cultural change may be very rapid. In many-to-one transmission, every recipient is assumed to be influenced by many transmitters, and all transmitters act in concert so that the influence is reciprocally reinforced. Consequently, change in the frequency of a belief or practice over time and space should be slow, and variation within the population low. This mode of transmission tends to generate the highest uniformity within the group.

In order to understand how the first two mechanisms influence cultural diversity, we conducted a study of 49 beliefs and practices in 277 African cultures (Gugliemino et al. 1995). The beliefs and practices included everything

Table 5.2 Mechanisms of Cultural Transmission

	Vertical	Horizontal	One-to-many	Concerted or many-to-one
Transmitter	Parent(s)	Unrelated	Teacher, leader, media	Older members of social group
Transmittee	Child	Unrelated	Pupils, citizens, audience	Younger members of social group
Acceptance of innovation	Intermediate difficulty	Easy	Easy	Difficult
Variation between individuals within a culture	High	Can be high	Low	Very low
Culture change	Slow	Can be rapid	Most rapid	Most conservative

NOTE: MODIFIED FROM HEWLETT AND CAVALLI SFORZA (1988).

from subsistence and settlement patterns to kinship and family patterns. We wanted to understand whether each belief or practice was the result of adaptation to a particular environment, "cultural" diffusion, or "demic" diffusion. Cultural diffusion means the practice or belief diffused from neighboring cultures with the same belief or practice, while demic diffusion means the people moved into a new area and conserved particular aspects of their culture. Vertical transmission hypothetically leads to conservation of culture in demic diffusion. Horizontal transmission, on the other hand, is the mechanism by which cultural diffusion takes place. Linguistic affiliation was used as a measure of demic diffusion, and we developed a clustering index to evaluate how many neighbors had the same belief. The study demonstrated that kinship and family beliefs and practices in Africa had little to do with adaptations to the natural environment or cultural diffusion. Most features of kinship and family were better explained by linguistic affiliation and vertical transmission. Other aspects of culture, house construction for instance, were more influenced by the natural environment, whereas religious beliefs were more likely the result of cultural diffusion and horizontal transmission.

We are conducting further studies to evaluate the coevolution of genes, culture, and language in Africa and the Americas, and preliminary data suggest that kinship and family beliefs and practices tend to be conserved along with genes. In other words, aspects of kinship and family tend to be highly conserved, similar to genes, and their distribution across the landscape does not appear to be linked to adaptations to particular natural environments. This supports Kroeber's (1952) proposition that kinship has more to due with style and play and the creative inclinations of humans rather than with the constraints and practical aspects of daily living.

The data imply that the current distribution of kinship and family patterns is due to demic diffusion and conservative cultural transmission. This is supported by a nonevolutionary study of kinship by Burton et al. (1996) where he uses a sophisticated analysis of kinship and family patterns to describe culture areas. His kinship culture areas fit very nicely with the world's language and genetic distance trees (Jones 1999). He systematically generates two key dimensions of variability in family and kinship—a matricentric–patricentric continuum and a bilateral–unilineal continuum. For instance, Africa is strongly unlineal, but relatively egalitarian on the gender dimension, whereas the middle Old World (North Africa, the Middle East, South and Central Asia and most of China) is unilineal but patricentric. The distribution of the various culture areas of kinship are linked to the movements and expansions of dominant peoples (i.e., demic diffusion and vertical transmission) throughout history (e.g., Bantu expansion).

DTs vary on the hypothesized strength of links between culture and genes. Durham (1992), like the BEs, believes that most of culture is adaptive and that cultural practices enhance reproductive fitness. Culture is most likely to be maladaptive when it is imposed in stratified societies. Boyd and Richerson

(1984) and Cavalli Sforza and Feldman (1981), on the other hand, described several distinct mechanisms of cultural transmission that lead to culture taking a direction of its own.

Summary of Major Contributions

1. Neoevolutionary theory provides new and provocative views of kinship and the family: Hrdy's (1999) research indicates that polyandry is more common than previously estimated and questions many aspects of "natural" mother love; Smuts (1994) explains the neoevolutionary origins of human patriarchy; and Hawkes (1991) questions the provider role of males as being central to the evolution of the human family.

2. Neoevolutionary theory provides a new view of women in kinship studies. Women have a biology to build upon (Fisher 2000) rather than fight against. For some reason or another, biology in kinship studies was perceived as limiting or constraining when, in fact, it enables us to do so much.

3. Neoevolutionary approaches are consistent with theoretical developments in anthropological studies of kinship. First, neoevolutionary theories are consistent with current studies of kinship that emphasize the importance of gender/sex in shaping kinship relations (Stone 1997). EPs and PI theory indicate males and females should have distinct reproductive interests and evolved mechanisms of the mind, while a DT study demonstrated the importance of sex/gender in kinship in defining culture areas of the world that are consistent with genetic and linguistic categories of the world. Second, neoevolutionary emphasis on how individuals manipulate their environments or "culture" for their own interests is consistent with "practice" and "agency" theories (Bourdieu 1977, Giddens 1979) where individuals also actively manipulate their cultural environments.

4. Culture is alive and well in neoevolutionary ("biological") thought. All neoevolutionary styles (EPs, BEs, and DTs) view culture and biology as mutually constituted. BEs view individuals in culture more like practice theorists, while DTs tend to view culture more like Kroeber (1952) and Boas (1938) where culture can take a course of its own and many aspects of kinship systems may have to do with play and "style" rather than with adaptations to particular natural environments.

Evolutionary theory is in a good position to revitalize kinship studies. It is a coherent theory that can generate testable hypotheses. One can focus on universal features of kinship or culturally and historically specific patterns. The abundant criticisms of kinship studies in anthropology were warranted and useful (Schneider 1984; Holy 1996), but they led to the demise of research in this area because they did not offer viable alternative paradigms, other than that kinship systems needed to be studied on their own terms (i.e., from the people's perspective). While important, this view did not help to interpret and explain cultural diversity, and it is impossible to obtain funding to conduct descriptive studies. It is clear that kinship is important for all peoples in all parts of the world. Neoevolutionists would also support cultural critiques of kinship that suggest kinship needs to be more broadly defined in anthropology to include topics such as ritual and "fictive" kin.

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