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Human Relationships

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control. Strong interdependencies imply that the behavior of fellow family members can be called into question. Given increasingly egalitarian relationships, the direction of social control is not only from the old to the young but also the other way around.

Third, research on kin relationships provides insight into processes of modernity. This is achieved by examining the changes in kin relationships that accompany changes in economic conditions, labor market arrangements, government provisions, laws, and cultural climate. A leading question is whether given economic and social circumstances facilitate or require particular kinship patterns. Family sociologists writing in the 1950s argued, for example, that a nuclear family system with its self-contained units was best suited to meet the mobility requirements of industrialized societies. More recently, migration scholars have attributed the rise in transnational families, where members live across national borders, to the growing wage gap between poor and rich countries and the increased demand for care services in developed countries.

Pearl A. Dykstra

See also Aunts and Uncles, Relationships With; Extended Families; Families, Definitions and Typologies; Families, Demographic Trends; Families, Intergenerational Relationships in; Fictive Kinship; Kinkeeping; Sibling Relationships

Further readings

Allan, G. (1979). *A sociology of friendship and kinship.* London: Allen & Unwin.

Carsten, J. (2004). *After kinship.* Cambridge, UK: Cambridge University Press.

Dykstra, P. A. (1990). *Next of (non)kin: The importance of primary relationships for older adults' well-being.* Lisse, NL: Swets & Zeitlinger.

Finch, J., & Mason, J. (1993). *Negotiating family responsibilities.* London: Tavistock/Routledge.

Johnson, C. L. (2000). Perspectives on American kinship in the later 1990s. *Journal of Marriage and the Family, 62,* 623–639.

Hagestad, G. O. (1981). Problems and promises in the social psychology of intergenerational relations. In R. W. Fogel, E. Hatfield, S. B. Kiesler, & E. Shanas (Eds.), *Aging: Stability and change in the family* (pp. 11–46). New York: Academic.

Mason, J. (2008). Tangible affinities and the real life fascination of kinship. *Sociology, 42,* 29–45.

Schneider, D. M. (1980). *American kinship: A cultural account* (2nd ed.). Chicago: University of Chicago Press.

Weston, K. (1991). *Families we choose: Lesbians, gays, kinship.* New York: Columbia University Press.

Kin Selection

Kin selection refers to the evolutionary process leading to adaptations that promote altruism among close genetic relatives. Also known as Inclusive Fitness Theory, Kin Selection Theory was first described by William Hamilton in 1964 and is perhaps the most significant addition to Darwin's theory of evolution by natural selection in the 20th century. At the time of Hamilton's publication, altruism had been a biological mystery; there was no cogent account for why evolution would select for altruistic behaviors that reduced one's own chances of surviving and reproducing and enhanced the survival and reproduction of another. After all, natural selection was thought to produce solely selfish behaviors—a "nature red in tooth and claw." Hamilton's elegant theory provided the missing logic for how altruism could have evolved. This entry discusses the logic of kin selection and provides examples of the kinds of questions Kin Selection Theory can address.

The Logic of Kin Selection

The key to understanding kin selection is to take a gene's-eye view. A gene, unlike an individual, can propagate in two different ways. The first is by promoting the survival and reproduction of the body in which it resides. The second is by promoting the survival and reproduction of other bodies that have a high probability of possessing an identical copy. Who is likely to share a copy of the same genes? By virtue of sharing common ancestors, close biological relatives have a greater than average chance of sharing genes. The more closely related kin are to one another, the greater the likelihood they will share genes. For instance, nuclear family members (mother, father, children, and siblings) on average have a probability of .5 of sharing a particular gene in common. The probability of sharing a particular gene in common with a grandparent, niece, nephew, aunt, uncle, or half sibling drops to .25; a first cousin drops to .125, and so on. This probability describes the degree of relatedness between two individuals and is a crucial component of Kin Selection Theory. An example is provided for how to compute degree of relatedness at the end of this entry.

Hamilton proposed a set of mathematical equations that captures the rules evolution might have approximated to shape a system producing kin-directed altruism. In its most basic form, kin selection can be represented by the equation $r_iC_i < r_jB_j$. This states that selection will tend to favor altruistic motivations when the costs associated with individual *i* performing an altruistic act (C_i) weighted by individual *i*'s degree of relatedness to himself (r_i) are less than the benefits bestowed on recipient *j* (B_j) discounted by the *i*'s degree of relatedness to *j* (r_j). Since r_i equals 1 (people have a probability of 1 of having the same genes as themselves), the equation is typically written $C < rB$, where it is understood that the person performing the altruistic deed is oneself and another person is the beneficiary.

Questions Addressed by Hamilton's Equation

Hamilton's equation is a powerful tool for investigating when it pays to behave altruistically (or selfishly) toward another and when one should want others to behave altruistically (or selfishly) toward oneself or related others. It also provides a means of examining conflicts of interest. For instance, since Bart is more closely related to himself, he may want to be selfish and not share his Butterfinger with his sister Lisa (maybe just a crumb), but his mother Marge likely sees the world differently and would want Bart to share right down the middle since she is equally related to Bart and Lisa.

When To Be Altruistic?

Hamilton's equation can be used to compute when it pays to be altruistic to another individual. For instance, from Bart's perspective, when should he help Lisa? Starting with Hamilton's equation: $r_iC_i < r_jB_j$, it is possible to substitute in the degrees of relatedness. Bart is the one incurring the costs of helping (C_i), and since he is 100% related to himself, $r_i = 1$. In this example, Lisa is the one who benefits (B_j). Last, r_j is Bart's degree of relatedness to Lisa, which is ½ (see below for how to compute this probability). Hamilton's equation becomes $C < ½\ B$ or $2\ C < B$. In words, this means that it would pay for Bart to help Lisa when the benefits to her are greater than twice the costs to him. Lisa needs to really benefit from an altruistic act for it to be worth Bart's while to help her. If she were a half sister with a degree of relatedness of ¼, Lisa would have to really really benefit, greater than four times the costs Bart incurs for being helpful ($4\ C < B$).

Of course, Hamilton's equations are simplified and do not take into account the many other variables selection weighs when shaping altruistic motivations. For instance, age, context, and the benefits of reciprocated altruism are not considered yet are known to play an important role when individuals decide when and whom to help. Nevertheless, they provide a good first approximation of the patterns of altruism one might expect. Additionally, Hamilton's equations may be most likely to apply to acts that carried fitness consequences generation after generation in ancestral environments. In particular, Hamilton's equation is expected to operate when resources are scarce and decisions about altruistic effort have large fitness consequences (e.g., risking one's life to save someone, sharing food when one is hungry or during famine, etc.).

When Will a Person Believe That Another Should Behave Altruistically?

In addition to computing when Bart would likely help Lisa, Hamilton's equation enables computations about when Bart should want Lisa to help him. Starting with Hamilton's equation, $r_iC_i < r_jB_j$, it is important to consider who is incurring the cost and who is benefiting. In this example, Lisa is incurring the cost to be altruistic to Bart, and Bart is reaping the benefits. Because Bart is interested in his perspective in this decision, it is necessary to indicate his degree of relatedness to the individual incurring the costs (Lisa) and his degree of relatedness to the individual receiving the benefits (himself). Hamilton's equation thus becomes ½ C < 1 B. This is because Lisa is incurring the costs, and Bart's degree of relatedness to her is ½. Bart is getting the benefits, and his degree of relatedness to himself is 1. Restated conceptually, while Bart cares that Lisa is incurring some costs to help him out, he is only half as sensitive to her costs as he is to his own gains. This is because Lisa only has a .5 probability of sharing Bart's genes. So from Bart's perspective, Lisa should help whenever the benefits to Bart are at least half the costs to her.

Conflicts of Interest

Hamilton's equations can also be used to identify points of conflict. Each person sits at the center of a unique web of familial relationships (e.g., one's sister is someone else's daughter, granddaughter, niece, mother). This means that tradeoffs optimal to oneself may not be viewed as optimal by others with different degrees of relatedness to the actors involved. As the above examples show, it is possible to calculate the answer to the question "When should Lisa help Bart?" from both Lisa's and Bart's perspective. For Lisa, the answer is whenever the benefits to Bart are greater than twice the costs to her, or B > 2C. For Bart, the answer is whenever the benefits to himself are greater than only half the costs to Lisa, or B > ½C. Thus Lisa and Bart will not see eye-to-eye whenever ½C < B < 2C. This range of costs defines the scope of conflict. Although much of the research on genetic conflicts of interest has been done in nonhuman species, researchers have identified conflicts of interest during human pregnancy where offspring attempt to extract more resources (e.g., blood glucose) than is optimal for the mother to give.

In general, what this exercise shows is that from a gene's-eye perspective two people are unlikely to share the same view about who should be delivering benefits of what magnitude to whom. This has implications for understanding socialization concerning altruism. Who would teach Bart to share with his sister when C < 2B? Not his mom. She would urge him to share whenever C < B because from her perspective she is equally related to Bart (r = ½) and Lisa (r = ½), cancelling both degrees of relatedness from the equation. If it were left to Lisa, she would teach Bart to share whenever 2C < B. So to a certain extent, children might have decision rules that are resistant to certain types of socialization, particularly processes that do not match the cost-benefit outcomes that would have maximized their own inclusive fitness. This possibility has not been fully explored, and future research is needed to determine the extent to which Hamilton's equation explains modern-day human behavior.

It is worth keeping in mind that individuals do not consciously calculate Hamilton's rule to decide when to share or be selfish. Rather, these rules are likely to be integrated into a variety of motivational and cognitive processes in a manner that causes some acts of altruism to seem minor and others more laborious. Additionally, kin selection is only one route to altruism based solely on probabilities of relatedness. Certainly, kin share with and help each other due to principles of reciprocal altruism and mutual valuation. These are likely very strong factors involved in generating altruistic behaviors among close genetic relatives. A complete understanding of the relationships among family members requires consideration of all sources of altruistic motivations.

Cognitive Architecture of Kin Selection

Hamilton's theory of inclusive fitness and the associated equations have helped propel the field's understanding of human social relationships. Nevertheless, almost 50 years after its publication, the field has only just begun to explore the psychological mechanisms mediating kin-directed altruism. For instance, according to Hamilton's equation, a key variable is degree of relatedness, r. But how does the mind approximate r? Certainly people can make the calculations explicitly, but this probably is not how daily decisions are made.

Since people cannot see another person's genes directly, the best evolution could do is to design a mechanism that uses cues that were reliably correlated with genetic relatedness in the ancestral past to compute an internal index of relatedness. One cue that has been investigated as an indicator of siblingship is childhood coresidence duration. Ancestrally, childhood coresidence would have been a good indicator that another individual was a sibling because children being cared for by the same mother (and father) would have remained in close physical proximity. If childhood coresidence does indeed serve as a cue to siblingship, then it should influence the computed internal index of relatedness, which in turn should regulate levels of altruism. Indeed, the longer two individuals coresided during childhood, the greater the level of altruism between the pair. Certainly, cues other than coresidence duration might govern assessments of kinship such as seeing one's mother caring for a newborn, facial resemblance, and olfactory recognition. Because any cue to kinship should affect the calculation of one's degree of relatedness to another, a good litmus test for a potential kinship cue would be to see whether it does indeed predict levels of altruism in the manner predicted by Hamilton's theory.

How to Compute Degree of Relatedness (r): What Is the Probability You Share a Gene With Your Full Sister?

The answer is .5, and here is how this is computed. People can share a gene with their sister either because their mother gave each of them the same gene or because their father did. When computing *r*, each possible route of transmission needs to be considered separately. Starting with the mother, the probability she is the source of the shared gene equals the probability a gene in the child came from the mother X the probability she gave the sister the same gene (both events need to occur, and in logic this requires multiplying the probabilities). Because people are a diploid species, receiving half of their genes from each parent, this translates into 0.5 X 0.5, which equals .25. So the probability of sharing the same genes with a sister via a mother is .25. Following the same logic, the probability of sharing a gene with a sister via a father is also .25. This means that the probability of sharing the same gene with a sibling through either your mother or father is .25 + .25, or .5.

Debra Lieberman, Martie Haselton, and Bill von Hippel

See also Evolutionary Psychology and Human Relationships; Fictive Kinship; Kin Relationships

Further Readings

Buss, D. M. (2008). *Evolutionary psychology: The new science of the mind* (3rd ed.). Boston: Pearson.

Daly, M., Salmon, C., & Wilson, M. (1997). Kinship: The conceptual hole in psychological studies of social cognition and close relationships. In J. Simpson & D. T. Kenrick (Eds.), *Evolutionary social psychology* (pp. 265–296). Mahwah, NJ: Lawrence Erlbaum.

Hamilton, W. D. (1964). The genetical evolution of social behavior. I. II. *Journal of Theoretical Biology, 7,* 1–52.

Lieberman, D., Tooby, J., & Cosmides, L. (2007). The architecture of human kin detection. *Nature, 445,* 727–731.

Kissing

Kissing is a highly species-typical instance of human behavior. Why do people kiss? Does kissing have important consequences? Do men and women use kissing to achieve different objectives? What about kissing technique? Why are males more likely to attempt to initiate open mouth kissing with tongue contact?

The origin of kissing behavior is a good place to start. Long before the invention of blenders and baby food, mothers probably chewed up food and then transferred small portions of the food from their mouth to their baby's mouth to introduce solid food into the baby's diet. Some people theorize that kissing is an evolved derivative of this primitive feeding gesture between mother and child.

There are at least three different types of kisses. Kissing can be used as a ritualized symbolic greeting gesture, as when people meet and kiss each other on the cheek or hand. Kissing on the face but rarely the lips also occurs among family members as a gesture of affection and caring between close relatives. Romantic kissing, on the other hand, is more likely to involve kissing on the lips and often has mating or sexual overtones.

Romantic kissing occurs in over 90 percent of human cultures. Even among those cultures where kissing is absent, courtship often involves face touching, face licking, face rubbing, and nose-to-nose contact, which like kissing brings the participants into close intimate facial contact. Some of humans' closest living relatives, chimpanzees and bonobos, appear to engage in kissing behaviors as well.