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Gift Giving as Costly Signaling in Courtship Contexts

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Abstract

Social scientists from a variety of fields have grappled with questions about why gift giving exists and where its utility comes from because it is economically inefficient. Economic models of sexual relationships (e.g., Baumeister & Vohs, 2004) propose that gifts given by men are motivated by attempts to barter for access to sex. We offer an alternative model, based on costly signaling theory (Zahavi, 1975), which suggests that men give gifts to serve as costly and honest signals of invisible qualities that are correlated with traits that females would find valuable in mates, but which they cannot observe directly. The present review is designed to contribute to the advancement of knowledge about the functions of gift giving, particularly in human courtship contexts.

Gift Giving as Costly Signaling in Courtship Contexts

Gift giving is a pervasive human phenomenon. Social scientists from a variety of fields have expressed interest in gift-giving and have grappled with questions about why it exists. Sociologists, for example, explore the functions gifts may serve in society (e.g., Caplow, 1982, 1984; Cheal, 1986; Gould & Weil, 1991). Economists attempt to explain the utility of gift-giving, which is seen as an inefficient use of resources (e.g., Camerer, 1988). Marketers and advertising researchers try to explain the emotional and affective bases of gift giving to better understand consumers' preferences and behaviors (e.g., Belk & Coon, 1993; Beltramini, 2000; Dorsch & Kelley, 1994; Sherry, 1983). Psychodynamic psychologists try to analyze the meaning behind gift giving in therapeutic settings and the potential ramifications of accepting or refusing patient gifts (e.g., Smolar, 2002; Stein, 1965). Anthropologists also have explored why gift giving evolved in human societies (e.g., Mauss, 1970; Malinowski, 1978).

Gift giving is hardly restricted to human beings. Gift giving has also been examined among a variety of animal species, including insects, birds, and non-human primates (e.g., Vahed, 1998). For example, chimpanzees and other non-human primates often provide each other with a "gift" of grooming, primarily as a means of reconciliation after conflict or to minimize hostilities under adverse circumstances (de Waal, 1997) and brown capuchin monkeys have been shown to voluntarily share treats with other individuals that helped them to secure the treats (de Waal & Berger, 2000).

Except for these few instances in which gift giving is loosely defined, however, courtship is the context in which gift-giving is most commonly seen in nature. When observing the offering and accepting of gifts in nature, the gender asymmetry inherent in the practice is striking. Almost exclusively, males give gifts to females, and not vice versa. The male dancefly

carries a nuptial gift of an insect prey to entice a female, and in some species he wraps the prey lightly in silk before offering it (Vahed, 1998). Male Australian brush turkeys create enormous mounds of twigs, leaves, earth and sand that are perfectly constructed to incubate a chick, and present them to females as gifts. Other bird species engage in food transfer as part of a courtship display (Lack, 1940). Although it has been argued that these gifts are merely bargaining tools that men use to entice females to mate with them, we believe there is a more interesting and complex reason why these animals give gifts to prospective mates.

Among humans as well as non-humans, gift-giving is an extremely common aspect of the courtship process in many cultures. On every continent there are cultures whose mating rituals involve the exchange of gifts for wives. Some examples include cloth to make a sarong for the bride-to-be among the Rungus Dusun of Sabah, Malaysia, (Appel, 1965), cash, cloth, and a mare among the T'u-jen of Kansu, China, (Schram, 1932) and liquor, silver and gilded rings, and cups and ladles among the Saami of Lapland (Itkonen, 1948).

Men offer elaborate gifts to a woman's family before, during, and after the wedding ceremony. These rituals have largely been conceptualized as a resource exchange. Simply stated, in this view, men provide gifts to the woman and her family in exchange for sexual access. This is an explanation for gift giving that is highly consistent with Baumeister and Vohs's (2004) exchange model of sexual relations. However, in cultures where women have greater choice in whom they marry, and where there are not specific gifts that are required in certain sequences and accompanied by certain rituals, the phenomenon of gift giving in courtship is still prevalent.

Why is Gift Giving Such a Common Aspect of Courtship?

Having established that people and animals give gifts, and that they do so with fierce intensity especially in courtship circumstances, why do they do so? In this paper we set out to explore the tenability of a theoretical approach to answering this question that has become increasingly common in the social and biological sciences. Our hypothesis is that individuals give gifts during courtship in order to provide honest information to their mates about invisible qualities that are relevant to their value as mates. This is called the Costly Signaling hypothesis.

Our review proceeds in several sections. First, we outline the Costly Signaling hypothesis in detail. Second, we review studies from theoretical biology and entomology that have tested, and largely supported, a costly signaling theory of gift giving in courtship contexts. Third, we review the (admittedly limited) literature on gift giving in human courtship contexts to evaluate whether the costly signaling approach receives good support from the available evidence. Fourth, we attempt to summarize the review of the evidence with our own conclusions about how well the costly signaling hypothesis is supported by the existing data. Finally, we offer some suggestions for further research in this area.

Costly Signaling Theory

A signal is any feature of an animal or its behavior which is shaped by natural selection to influence the behavior of other animals (Krebs and Dawkins, 1984, cited in Weary and Frasier, 1995). These signals can include physical characteristics of the animal, such as a peacock's tail or a deer's antlers, visual displays, such as "stotting" of gazelles, chemical stimuli like sex pheromones that many insects and mammals use, and vocalizations and other sounds that animals produce, such as begging calls of infant birds.

Signaling theory evolved slowly as scientists began to theorize about why these different types of signals exist in nature, what messages they are intending to communicate, and what

functions they serve in the evolutionary success of the species that use them. Darwin (1871) wondered whether the fact that females from many species are selective in their breeding choices explained why so many male birds and other animals were ornately decorated. After observing that male peacocks seemed to show off their tails when trying to entice females, he suggested that this was because peahens differentially *chose* long-tailed males as mates. For the next hundred years, biologists developed theories that would explain this phenomenon more completely. They found Darwin's explanation lacking, particularly because it did not explain why peahens would choose something that seemed to provide no apparent value.

More than 100 years later, Zahavi (1975) revisited the puzzle of the peacock's elaborate and showy tail. To grow its impressive tail, a peacock must expend valuable metabolic resources. Having a large tail also inhibits the peacock's ability to fly, which could be a major impediment if trying to escape predators. Zahavi proposed that these extravagances are signals to other peacocks, transmitting messages about the bearer's quality. He proposed that a peahen could use the tail as a reliable signal of the peacock's health or genetic quality, since producing an elaborate tail is something that only a healthy or strong peacock could afford to do. Zahavi named this idea "the handicap principle," implying that these costly signals were handicaps to the bearer. He suggested that there was something inherently "honest" about these costly behaviors or features that animals exhibited, and that they could therefore be considered to be reliable by other animals receiving the signal.

Signals as Wasteful, Honest Indicators of Male Quality

Grafen (1990) placed the handicap theory in the field of game theory. Grafen used mathematical and game-theoretical models to show that natural selection of a wide class of signals necessarily incurs waste in accordance with the handicap principle. For costly signaling to

work in mate choice and sexual selection contexts, Grafen argued, males must vary in certain ways with which females are concerned (i.e., genotypically) but which they are unable to observe. If the females could observe these genotypic variations, they would be selected to use information about this variation as a criterion in mate choice. It is assumed that the higher a male's true quality, the better for the female. It is also assumed that the male cannot alter his own true quality value.

Grafen also proposed that for costly signaling to work in mate selection, males must also vary in an observable (i.e., phenotypic) quantity, which can be considered their advertising level. The amount of advertising a male uses will vary depending on his genotypic quality level. Males can alter their advertising level, and a mathematical function exists to predict which level of advertising a male will choose corresponding to each true quality he possesses. Finally, Grafen proposed that females use the observed value of the males' advertising to infer their true quality. This perceived quality has a mathematical function which determines the perceived value of a male with each possible level of advertising. It is assumed that the males who are perceived by females as having a higher value are fitter as a consequence of females' responses to them.

In Grafen's model of costly signaling as applied to mate selection, the fitness of a male depends on three things: His true quality, the level of advertising he uses, and his perceived value. A female's fitness is assumed to depend on her ability to perceive a male's true qualities. Over the course of generations, through natural selection males' typical level of advertising stabilizes to a point where their true quality is demonstrated, so that females correctly infer a male's quality from his advertising level. The net effect of the males' advertising and the females' choice is that males with higher quality end up with a higher reproductive fitness.

Therefore, higher quality males advertise more but these costs are more than compensated for by the result of their advertising on the females' preference for them.

Finally, Grafen illustrated that in costly signaling situations, the signals are clearly handicaps: They are more costly than not doing them. If the advertising was not costly, the signals would not function the way they do. All males voluntarily advertise more than they need (which is costly), higher quality males advertise more, and females use the advertising they perceive as a reliable guide to quality. Through this argument, Grafen came to the surprising conclusion that the cost of the signal is essential to its functioning: The signal is selected *specifically because it is costly to the signalers and reduces their fitness in that area*. Hopefully males are repaid for their costly signal by the interpretation of the signal by females. Grafen proves that handicaps are not just one possible kind of signal: He claimed that if we see a characteristic in an organism that signals its quality, it must be a handicap.

Signaling as Mutually Beneficial Exchange of Information

Two key conditions must exist for a signal to be an evolutionarily stable strategy. Firstly, both the signaler and the signal receiver must benefit from sharing information about the signaler's genotypic variation on the underlying quality. Secondly, the signal must impose a cost on the signaler that is related to the quality being advertised. This relation can be one of two kinds: (a) lower-quality signalers must pay a higher cost for signaling, or (b) lower-quality signalers reap a lower benefit from signaling (Smith & Bliege Bird, 2000). These two conditions are interrelated because the second condition, which stipulates that cost varies depending on quality, ensures that the signal honestly conveys information about the true status of the signaler, which is the first condition (Smith & Bliege Bird, 2000). If individuals of high quality pay lower costs or receive greater benefits for a certain fixed level of signaling than lower quality

individuals do, then the optimal balancing of costs and benefits of exaggerating should result in a positive correlation between signal quality and signaler quality (Grafen, 1990; Getty, 1998).

As stated above, the honest information conveyed through signaling benefits both the signal sender and the signal receiver, even though these two participants in the signaling process may have incongruent goals or purposes for using the information. Whether in the case of predator-prey relationships, where goals are clearly at odds, or more ambiguous cases like parent-child relationships or potentially mating males and females of the same species, differing goals abound. Costly signaling theory offers a powerful framework for explaining how honest communication can be ensured despite signalers' and receivers' divergent goals.

Costly and Honest Signaling in Human Behavior

We can now consider situations in which human behavior may be understood using a costly signaling approach. There are numerous instances in society where people do things that seem to use energy, time, or money inefficiently. Veblen (1899) coined the term "conspicuous consumption" after observing wealthy people in the practice of buying lace (an extremely expensive product to manufacture that lacked high functionality.) He theorized that they did so to advertise their wealth to others and thus gain status. Using Smith & Bliege Bird's (2000) descriptions of the four qualities a behavior must possess to qualify as a costly signal, conspicuous consumption indeed (a) is easily observed, (b) is costly to the actor, (c) is a reliable indicator of some trait or characteristic of the signaler, like access to resources, (which is clearly un-fakeable in the case of displaying wealth), and (d) may lead to some advantage for the signaler (e.g., elevated social status or respect).

Veblen's illustration of people acting wastefully purely for the social status and respect that wealth commands from others distinguishes costly signaling theory from reciprocity

theories, other explanations for some seemingly wasteful behaviors (Trivers, 1971; Rothstein and Pierroti, 1988). In reciprocity theories, the giver operates under the expectation that acts of kindness will be returned, either in kind (reciprocal altruism) or by repaying the giver's present generosity with a more valuable object or act in the future (conditional reciprocity). Costly signaling theory, on the other hand, explains generous acts that will never or may never be reciprocated (McAndrew, 2002).

Costly and Honest Signaling in Courtship Contexts

Costly signaling has been used to show how some behaviors seem to be operating as costly signals in courtship and mate retention contexts. One particularly illustrative example is turtle hunting among the Meriam, a Melanesian people living on Mer, a barrier reef island off the coast of Australia.

Turtle hunting is a very strenuous and time-consuming practice undertaken by certain Meriam men, typically to provide turtle meat for feasts (Smith & Bliege Bird, 2000.) A turtle hunting crew consists of 3-6 men including a hunt leader who directs the hunt, one or more "jumpers" who leap into the water to catch the turtles, a harpooner, and a driver to steer the boat according to the leader's commands. A typical turtle hunt lasts several hours, and if the hunters have been successful, they return to Mer and give the live turtles to the family holding the feast. The turtle hunters are not compensated in any way for their labor or their meat, and they do not even necessarily eat a single portion of the meat unless they attend the feast.

On the surface this practice is puzzling because the costs of turtle hunting in terms of time, energy, money for engine fuel and equipment for the boat, and potential risks of physical harm are all substantial. Among the Meriam, there are many other sources of food that are much easier to acquire. Also, during nesting season, turtles come on to the beaches to lay eggs, and

during this time, catching turtles is easy and is frequently done by women, children, and older men. Interestingly, however, young men sometimes hunt turtles using the difficult sea-faring method even during the nesting season!

Smith and Bliege Bird propose that Meriam men's willingness to pay such extensive costs by engaging in turtle hunting could be satisfactorily explained using a costly signaling framework. They suggest that success in hunting is an honest signal of quality. Successful leaders of hunts signal their charisma, skill, specialized knowledge required to successfully lead a hunt, and ability to absorb the cost of the generosity required. Jumpers signal their agility, diving ability, strength, and willingness to risk injury (Smith & Bliege Bird, 2000.) And, during the non-nesting season, where this elaborate procedure is the only way to acquire turtles, the turtles that are brought back are honest signals of both the costs the hunters incurred and the skills they possess.

To be considered costly signaling, turtle hunting must be an effective way to broadcast this information about the hunter. Ethnographic data showed that Meriam people can discriminate between hunters and non hunters, as well as between better and worse hunters, and that they are typically aware of the results of any particular hunt. Smith and Bliege Bird believe that turtle hunting takes place primarily because it offers the opportunity to broadcast the hunting results at a feast, and they use the fact that Meriam men do not engage in this type of hunting unless a feast is scheduled (Bliege Bird & Bird, 1997) as evidence to support their belief. In other words, hunters engage in the most costly form of hunting only when they will be giving the catch away.

To meet criteria for costly signaling, turtle hunt provisioning to feasts must also be costly and not counterbalanced by reciprocity or trade (Smith & Bliege Bird, 2000). Reciprocity

theories cannot account for this behavior, because turtle hunters provide the meat to all the attendees of the feast, and it would thus be unclear who would need to repay the hunters' generosity. A costly signaling interpretation of this behavior would not expect to find repayment or any costly act of reciprocation on the part of receivers. And, indeed, interviewed hunters said that they do not feel as if they are doing the feast throwers a favor. They claim to enjoy the hunt and do it for its own sake. Also, contrary to a previous hypothesis, hunters do not seem to trade turtle meat for alliances with the families holding the feast, since turtle hunters are not more likely than other men to be named by these families as allies (Smith & Bliege Bird, unpublished data.)

The fourth condition of a costly signaling behavior is that the signaler must benefit from sending the signal, and this benefit must come from the response of the signal receivers. Smith and Bilge Bird expected, therefore, that better turtle hunters would receive benefits from their higher status and reputation, and that these benefits would exceed the expended costs. Indeed this was found to be true. Major benefits a turtle hunter seems to reap are widespread social status, respect of elders, a reputation as a man who has the best interest of the entire Mer population at heart, increased political influence, and impressing his character and skills upon potential in-laws.

Mer women named attributes contributing to their choices of mates, yet no significant association was found between men's reproductive success and whether they were classified as outstanding fishermen, dancers, political leaders, or as "popular with the ladies" (Smith et al, 2003). Although neither hunters nor jumpers seemed to gain immediate benefits in terms of female choice as a partner, further studies showed that turtle hunters, and hunt leaders in particular do reap reproductive benefits over other Meriam men. These include earlier onset of

first reproduction, higher age-specific reproductive success, and higher quality mates, who also achieve higher than average reproductive success. These hunters also have more mates (women who bore their children) on average than non-hunters, and more co-resident sexual partners (non-mates) than other men. Since all of the required criteria have been met, Smith and colleagues have concluded that turtle hunting behavior indeed qualifies as costly signaling.

Clearly, signalers acquire social advantages through costly displays such as conspicuous consumption and turtle hunting. In these examples, costly signaling to a group of individuals offers reputation enhancement benefits to the signalers. In the second instance, the signalers also apparently received direct reproductive advantages as a result of their enhanced reputations.

Gift Giving in Mate Selection Contexts: Insects

Having examined several of instances in which costly signaling may provide a functional explanation for a variety of social behaviors, we now propose that costly signaling theory is a viable theoretical framework for explaining why gift giving evolved in mate selection and retention contexts. Research on gift giving in courtship contexts among insects and humans is consistent with a costly signaling interpretation.

A number of arthropods engage in male-to-female gift giving either before, during or directly after courtship or copulation. These gifts range in type from food captured or collected by the male, to glandular products of the male, to parts or even the whole of the male's body. In his review of empirical studies on nuptial feeding in insects, Vahed (1998) explored the debate among entomologists regarding whether nuptial gifts function as paternal investment (to increase the fitness of or number of the male's own offspring) or whether they function as mating effort (to attract females, facilitate mating, or maximize ejaculate transfer to the female.) Other hypotheses, which may apply for certain taxa of insects, include the idea that the two

explanations above are not mutually exclusive and can apply simultaneously, and the proposition that males give nuptial gifts to females to prevent themselves from being eaten by their mates.

Interestingly, the conclusions that can be drawn about the function of different types of nuptial gifts may vary by insect genus and species. Within the same family, for example, danceflies (order Diptera, family Empididae), there are a variety of differing kinds of gifts. In most empidine species, each male carries a nuptial gift of an insect prey and enters a swarm of males, into which the female then enters and from which she chooses a mate. During copulation, the female feeds upon the prey item and the pair remain in copulation until the female finishes her meal. (Cumming, 1994). In some other members of the Empididae family, in the genus *Hilara*, the prey is wrapped in silk before being offered to the female. In other species, the prey gets wrapped in a complex silk (inedible) balloon-like structure before being given to the female. In still other instances, the silk balloon contains a tiny prey item that is useless as food. Lastly, there are species in which the complex silk balloon contains nothing at all, and the female merely manipulates it during copulation. In the case of these inedible gifts, it seems that the gift functions solely to entice the female to copulate, perhaps because the gift acts as a display of male fitness (Thornhill & Alcock, 1983), that is, it functions as a costly signal.

When female insects make a choice among available males based on the size or quality of the male's gift, they have several motivations for doing so. One benefit to a female of choosing a large or appealing gift is that she will gain more nutrients for reproduction or for her own bodily maintenance. Another involves potentially bearing sons that will be more successful in attracting and inseminating females. A third benefit, which also seems to be an overarching one that may encompass the former two, is that the gift may act as an honest signal of the male's underlying genetic quality.

As Vahed (1998) concludes from his review of nuptial feeding among a wide variety of insects, the mating effort hypothesis seems to be more strongly supported than the paternal investment hypothesis for insects. This seems logical additionally because regardless of the effect that the gift is intended to have once the mating process has begun, the male member of the species must first contend with getting the female member to choose him over other available mates. Providing a large, a particularly attractive, or a particularly tasty or nutritious gift are ways that a male insect can signal his quality to the female. Offering these good nuptial gifts, therefore, would be an evolutionarily selected quality. Throughout evolutionary history, the males that offered the “best” gifts were most likely to successfully mate and pass on their genetic material to the next generation.

Gift Giving Among Humans

We believe it is possible that gift giving arose in human societies partially to serve a signaling function as well. Furthermore, we believe that costly signaling theory can explain gift giving behaviors between romantic partners in modern society. Again using Smith & Bliege Bird's (2000) descriptions of the four qualities a behavior must have to qualify as a costly signal, for gift giving to qualify as a costly signal it must be (a) easily observable by others, (b) costly to the signaler in resources, (c) a reliable indicator of some trait or characteristic of the signaler, and (d) beneficial in some way to the signaler.

Gifts that human exchange in courtship contexts automatically meet two costly signaling criteria. First, the gifts themselves and the process of giving them (which Sherry, 1983, calls “prestation”) are clearly observable. Gifts also automatically meet the second costly signaling criterion: They are undoubtedly costly to the donor. Economists have given much attention to explaining why people give gifts instead of giving money, for example, a procedure that would

be much more efficient in terms of time, money, and other resources required to identify and obtain an appropriate gift. Shown through mathematical models, it is precisely the inefficiency of a gift that *makes it acceptable* as a gift (e.g., Prendergast & Stole, 1999). In other words, because a gift is inefficient, it effectively signals that the giver cares enough to “waste” the time, money, and energy in acquiring it. It can also be argued that gift giving in courtship contexts also meets the other two criteria that would be required for it to be considered a costly signal. Specifically, that it is a reliable indicator of some trait or characteristic of the signaler, and that it is beneficial in some way to the signaler.

Gift Giving and the Selection and Retention of Mates

For humans, like other animals, the selection of quality mates is crucial for fitness. Both males and females want to produce offspring who are healthy, strong, and in other ways fit to survive in the world and reach reproductive age, so that their genes can be passed on to the next generation (although in most cases we are not aware of these motivations). In pursuit of this goal, males and females both seek high-quality mating partners who will enhance their own fitness. However, females stand to lose more than males do by making a bad choice of mates because they invest more energy in each gamete they produce than do males (Buss & Schmitt, 1993.) Also, in species with internal gestation, females typically devote more energy to offspring before they are born than males do. Because of these sex differences in parental investment, it is more prevalent in nature for sexual selection to take the form of females choosing the male with whom they wish to mate, rather than males choosing the female with whom they wish to mate.

Gifts as Costly, Honest Signals

Inherent in this problem is that females need ways to gauge which male members of the species are likely to make the best mates. Like the peahen discussed previously who uses the tail of a peacock as an indicator of the bearer's genetic quality, human females may use gifts from males as a way to solve the adaptive problem of determining who might be the best potential mate for them to choose when not all of the characteristics they are looking for can be easily observed. Human males may use gifts to signal one or more of their underlying qualities in the hopes that the female recipient will find these qualities appealing and therefore choose him as a mating partner. If a male offers a gift that is costly to himself to a female with whom he has an interest in mating, and the gift does a good job of signaling what the woman is looking for in a mate and accurately reflects her preferences, then she is likely to heed this gift as a reliable signal of quality. It is likely that the signal is honest, since it is extremely costly for the man to fake and would be unlikely to be worth his effort. A diamond ring, for example, is an unfakeable signal of wealth or resourcefulness because only a person with substantial resources or a good work ethic could afford to send the signal (unless it has been stolen or acquired through some other means).

Traits That Gifts Can Signal

In addition to signaling wealth, a gift can signal other traits that prospective mating partners might desire, including attentiveness, caring, reliability, willingness to listen, understanding of the preferences of the receiver, strength, intelligence, and resourcefulness. Also, obtaining and presenting a gift involves all sorts of costs besides monetary ones. Therefore, even if a man is very wealthy, it is unlikely that he will go out of his way to research diamond rings, listen carefully to find out exactly what ring a woman wants, spend the time and

money on purchasing it, and create the perfect environment in which to give the ring to her if she is a woman with whom he only wants to spend one night.

Human Females' Evolved Mate Preferences

Because men and women have different adaptive problems to solve in reproduction, female parental investment tends to be at a higher level than male parental investment, because whereas the minimum investment for a male is one sexual encounter, the minimum for a female involves nine months of gestation, which is significantly costly to the female in terms of time, resources, energy, and opportunity costs. Trivers's (1972) theory of differential parental investment proposes that in a given species, the sex that invests more in the offspring will be selected to have stronger preferences about acceptable mating partners, because this sex has greater reproductive costs associated with indiscriminate mating. In *Homo sapiens*, therefore, females should seek to mate with males who have both the *ability* and the *willingness* to provide resources that contribute to the survival of offspring (Buss, 1989).

This idea has received empirical support. Because among modern humans resources tend to be translated into earning capacity, studies have examined whether women value attributes in mates that signal the possession or likely acquisition of resources—traits such as industriousness, ambition, and earning potential—more than men do (Buss, 1989; Feingold, 1990).

It also behooves women to find men who are willing to engage highly in parental investment of a non-material nature--specifically by remaining loyal to the woman, sharing his resources with her and her offspring, and being a caring, considerate, sensitive, attentive person. In a study of individual differences in sociosexual orientation, Simpson and Gangestad (1992) found that individuals with an unrestricted sociosexual orientation—tending to engage in sexual relations without closeness, commitment, and other indicators of emotional bonding-- tended to

prefer partners who were physically and sexually attractive and socially visible. In contrast, individuals with a restricted sociosexual orientation-- who do not tend to engage in sex in the absence of closeness and commitment-- tended to choose kind/affectionate, responsible, loyal partners. The next question is how gifts given by men to women in these two domains could have functioned as costly signals of the men's underlying traits.

Using Gifts to Identify Men who Have the Ability to Invest

Women could solve the adaptive problem of identifying men with the *ability* to invest resources in their children by looking for men who are endowed with special traits that enable them to procure resources. A highly dependable way to identify men with resources is to look for men who are wealthy. While agility or athleticism may signal *ability* to obtain resources, wealth itself leaves no doubt about the bearer's having resources. Wealth can be reliably signaled by men who offer *expensive* gifts, since the cost for a poor man to fake such signals is prohibitively high. A woman who receives a very expensive gift from a man can be sure that he had the resources to obtain it. (For example, a large piece of meat given as a gift clearly signaled that the donor could "afford" the luxury of giving the food or resources away, rather than needing to consume it himself to avoid starvation.) Therefore, as an unfakeable signal of wealth, or, more broadly, "social status/resourcefulness," the receipt of an expensive gift could have been useful in helping ancestral women to solve the first adaptive problem above.

Using Gifts to Identify Men who are Willing to Invest

Gifts are often valued more for their expressive value than their economic value (e.g., Belk & Coon, 1993.) Also, expensive gifts only signal prowess in the first domain-- in that wealthy men were *able* to invest resources. In order to identify men who are skilled in the

second domain, women needed to find men who were generally attentive, caring, sensitive, and *willing* to fulfill their long-term needs and those of their offspring by investing resources.

We propose that the gifts that most effectively signal the donors' qualities of being caring, thoughtful, attentive, and loyal in the long-term are gifts that *accurately reflect the woman's preferences*. Being able to match the preferences of a woman is something that, as is required by costly signaling theory, is not easily fakeable. It requires attentiveness to her likes and dislikes over time to be accurate, and therefore a man who has not taken the time to observe the woman's preferences is very unlikely to be successful. Camerer (1988) uses a game-theoretic model to show that gifts serve as signals of a person's intentions about future investment in a relationship. He offers two explanations for the pervasiveness of gift giving despite the inefficiency of gifts (inefficiency beyond gifts being less efficient than giving money by definition, as discussed previously). Indeed, Camerer ingeniously suggests that the inefficiency of gifts is precisely what enables them to function as costly signals. The first reason why gift giving persists despite their inefficiency is that their inefficiency is the price of error in guessing tastes, a proposal that is in line with the idea that matching a woman's preferences is a reliable way for men to signal caring, thoughtfulness, attentiveness, and willingness to invest.

To illustrate Camerer's point regarding inefficiency as the price of error in guessing tastes, we can modify an example he provides and make it pertinent to the present discussion. Imagine comparing two potential mates that a woman is considering-- one who knows her well and is a high-quality suitor interested in pursuing a long-term relationship with her, and one who is interested in her as a short-term partner but wants to lure her into a sexual relationship with him by fooling her into believing that he will be a good partner. Using gifts, the serious suitor would be able to distinguish himself from the casual suitor by giving gifts that match her

preferences. When the serious suitor surprises the woman with a gift she loves but didn't ask for, or perhaps didn't even realize she wanted, he is revealing his knowledge of her tastes, as well as his willingness to invest in her. The gift is a guess about what the woman will like, and occasionally the gifts will be wrong. They will sometimes be especially inefficient. However, the inefficiency cannot be avoided by asking the woman what she would like, since that would not distinguish the serious suitor from the casual suitor. The serious suitor must guess at the receiver's tastes, and risk making an error, in order to distinguish himself from the casual one (Camerer, 1988). The casual suitor would clearly be at a disadvantage in this situation. On average, a serious suitor would be more successful in matching her preferences than would a casual suitor, who had limited information on which to make a good educated guess. The woman would then presumably recognize the underlying qualities in the two men through the gifts they gave her and choose the man whose preference-matching gift signaled the highly valued underlying traits of attentiveness, caring, sensitivity, and willingness to invest in her in the long term.¹

Research on Gift Giving in Human Courtship

Research has found that women have much more detailed memories of gifts they have received than men do (McGrath, 1995). We would expect this gender difference from a costly signaling perspective because it would certainly have behooved ancestral women to pay close attention to the gifts they received and the underlying messages being signaled through them, as this information would have been helpful in making mating decisions. To solve the adaptive problems of identifying men with the ability to invest resources in her and her children, and identifying men with the willingness to care for them, protect them, and commit to them, it has been proposed that ancestral women would have chosen men who gave gifts that were expensive

and gifts that matched their preferences, since these two types of gifts signal those appealing underlying qualities of the donors.

Numerous studies document effects that gifts have on romantic relationships. Some of this evidence is consistent with the proposition that gift giving evolved to serve a costly signaling function for mate selection and retention. Indeed, by organizing the existing literature on the use of gifts in courtship contexts according to the principles of costly signaling theory, we can show that (a) people are aware that courtship gifts have expressive or symbolic value, and that they behave in accordance with their awareness of this fact; and (b) men and women tend to fill distinct roles, and experience distinct cognitions, in gift giving contexts.

People are Aware that Courtship Gifts have Expressive or Symbolic Value

For gifts to function as costly signals, they must express qualities of the giver that cannot be easily observed directly. Interestingly, among couples engaged in courtship, research has shown that people recognize that gifts have the power to convey hidden meanings. Belk and Coon (1993) collected a vast array of data from undergraduate and graduate students from in-depth interviews, questionnaires, and student journals to understand whether gift giving fits better into an exchange paradigm or as an expression of agapic love. After conducting preliminary interviews with several subjects to make sure their agenda was comprehensive, they gave subjects outlines to help them complete their dating journals, including requests for information about each participant's dating history, gift giving history, attitudes and experiences with dating, thoughts about love, and opinions about the role of money and gifts in a dating context. Belk and Coon (1993) found that participants valued gifts given by dating partners more for their symbolic value than their economic value, and that they perceived nonmaterial gifts as more

desirable than material ones. Also, they found that the monetary importance of a gift that is expensive in relation to the giver's means is indicative of the giver's sincerity and the degree to which the recipient is valued by the giver (Belk & Coon, 1993). This is what one would expect if gifts are costly signals because it is the "costliness" to the donor that makes the gift an effective signal for the recipient. When the gift is signaling wealth, it is not important whether the gift was proportionally difficult for the signaler to afford, because an expensive gift is an unfakeable signal of wealth. However, if the gift is meant to signal willingness to sacrifice on the part of the donor, or how important the recipient is to the donor, for example, then a gift that is costly in proportion to the giver's wealth may be more important than its actual cost.

Belk and Coon identified a variety of thematic roles that gifts play in romantic relationships, including gifts as symbols of commitment, gifts as cues to compatibility, and gifts as extensions of self. These roles that gifts might play are all congruent with what one would expect if gifts do indeed serve a signaling function in mate selection, since men being committed, compatible, and willing to share themselves are qualities many women look for in potential mates. Belk and Coon (1993) also illustrated, through numerous participant responses, that gift giving frequently functions as a means of "agapic expressiveness"--a way to express selfless, passionate love for a partner without using words when there is no expectation of a reciprocal gift or favor.

Because both parties in a gift exchange realize a gift's ability to signal the underlying characteristics of the giver, and because of the evolutionary importance of choosing a high quality mate, gift giving can cause a great deal of anxiety. Wooten (2000), interested in anxiety surrounding the gift giving process, asked college students and adults to answer open-ended questions about their most anxiety-producing gift giving and gift-selecting moments. He found

that participants were especially anxious about forthcoming reactions from recipients and others who might be present when their gifts were unveiled (Wooten, 2000). All participants in Wooten's study agreed that their anxiety usually coincided with concerns about eliciting desired reactions from recipients. In other words, people get anxious when they are highly motivated to induce desired reactions from recipients and others, but they are doubtful of success. Wooten identified recipients' influence as a very important factor that shapes perceptions of the interpersonal stakes involved in gift transactions. Influence refers to recipients' ability and willingness to bestow valued rewards upon givers (Wooten, 2000). This concept of influence is exactly the role the receiver plays in costly signaling: If the signal is not well-received by the recipient, the recipient is not likely to choose to strengthen or continue the relationship with the giver.

Men and Women Tend to Take Different Roles and Have Different Cognitions during Gift Exchange

If gift giving evolved to serve a signaling function in sexual selection contexts, then clearly the roles of men and women in this context would be different. Obviously, women give men gifts all the time, but we are proposing here that males may have evolved a courtship process that involves gift giving to signal genotypic qualities about themselves through the gifts and their prestation. It would have been in females' evolutionary best interest to be skilled in decoding the information conveyed through these gifts.

Saad and Gill (2003) found evidence to support the idea that gift giving involves sexual specialization. They administered a survey to 48 male and 45 female undergraduates containing a list of 9 motives, asking how often each of the provided reasons were important causes for giving a gift to a partner. The motives included six that were "tactical" (i.e., those that arose

from internal factors) and three that were “situational” (i.e., those that arose primarily because of external factors.). Tactical motives included “displaying financial resources,” “creating a good impression,” “as a means of seduction,” “showing affection,” “displaying long-term interest,” and “displaying generosity.” The situational motives were “occasion demanded it, (e.g., birthday),” “reconciliation after a fight,” and “to reciprocate.”

Because Saad and Gill wanted to explore both sexes’ abilities to accurately decode and interpret the meanings behind gifts received from members of the opposite sex, participants were also asked how often they thought each of the same reasons had been an important cause behind their partner offering them a gift.

Results for the condition in which respondents were in the role of the giver indicated that for five of the six tactical motives, (all of the above except “displaying generosity”), men were more motivated by tactical motives than were women (effect size *ds* ranging from .46-.84). There were no instances in which women’s motives were more tactical than men’s. (Among situational motives, there were no significant gender differences, although women were slightly more likely to give a gift because “the occasion demanded it.”) This is, of course, to be expected if gifts serve as costly signals because men are the ones who would be expected to be using gifts as signals to affect their potential partner’s choices in mate selection.

In the condition in which respondents were in the role of the recipient and were considering their perceptions of their partners’ reasons for offering gifts, Saad and Gill found that in most cases men think (erroneously) that they receive gifts from their romantic partners for the same reasons that they give gifts (namely for tactical reasons). Women, conversely, realize that men more often than women have tactical motives when offering gifts to romantic partners.

Because men are seldom courted using gift giving as a tactic, perhaps they did not evolve to learn to read the signals of this type of gift exchange.

Clearly, then, women and men have different subjective experiences in the gift exchange process. It is useful to examine these differences in further detail.

Females' roles in gift exchange. If gift giving indeed evolved to serve a costly signaling function for mate selection and retention, women should have emotional, cognitive, and behavioral responses in gift giving situations that are distinct from men's. In the context of gift giving, in this role, the females who will be the most successful are those who are skilled decoders of the messages that males send through gifts. Being a skilled decoder involves understanding the meanings that the gift conveys about the underlying qualities of the giver, being aware of the emotions one feels when receiving a gift, accurately remembering the details of gifts received over time, and determining whether the underlying qualities that the giver is signaling are qualities that will benefit her and her offspring should she mate with him.

McGrath (1995) found that when writing projective stories about gifts, females had significantly more elaborate thoughts and used significantly more words than men when in the role of the receiver of a gift. This is to be expected if gifts have evolved to serve a signaling function in mate selection, because when women receive a gift, they need to put more cognitive effort into making decisions about how to think about and respond to the giver. In addition, McGrath found that women tell realistic stories and use many words to describe their stories as receivers, which is to be expected if women have evolved a better ability to pay close attention to the details of both gifts they receive and their feelings upon receiving a gift.

Since women pay close attention to the gifts they receive—perhaps because gifts aid in judgments about a giver's fitness as a potential partner—we would expect that the gifts women

judge to be “on the mark” would positively affect the relationship. Through semi-structured interviews and critical incident surveys, Ruth, Otnes, & Brunel (1999) gathered qualitative data on participants’ memorable gift receiving situations and the emotions they experienced. They then selected ten relevant emotions (love, happiness, sadness, anger, fear, pride, gratitude, guilt, uneasiness, and embarrassment), assigned each participant to an emotion, and asked them to complete surveys about who gave the gift, the occasion, and a description of the gift. Then, each participant was provided with open-ended questions prompting them to describe the situation, the impact of receiving the gift on the relationship with the receiver, any long-term impact of receipt on the relationship, when the recipient last thought about the gift, and whether/how gift “plays a role in your life now.” By performing a content analysis of the emotions that people experienced during positive and negative gift receipt occasions and the impacts of the gifts on the relationships with the giver, the authors identified six possible basic relational outcomes of gift-exchange: (a) strengthening the relationship; (b) affirming a positive relationship; (c) negligible effect; (d) confirming a negative relationship; (e) weakening the relationship; or (f) severing the relationship. They coded the type of relational effect that the gift had both immediately after it was received and in the long term.

Gifts coded as functioning to strengthen giver/recipient relationships over the short and long term illustrate an important issue in sexual selection. Ruth et al (1999) claimed that these gifts are signals to the recipient that the giver shares his or her desire to deepen the relationship. These exchanges clearly meet Smith and Bliege Bird’s (2000) criteria for costly signaling and can be seen to clearly function in a sexual selection context. As always with gifts, they are easily observable and costly in terms of resources. They also send reliable signals to the recipient about the signaler, (e.g., that he is devoted to the relationship and wants it to have a deeper sense

of commitment) and, because the recipient uses the information inherent in the signal to understand the true qualities of the signaler and values what has been signaled, the relationship is strengthened, and the signaler therefore benefits from having sent the signal.

In trying to clarify how gifts can strengthen a relationship or affect relationship realignment, Ruth, Brunel & Otnes (2004) found that gift recipients' perceptions of how a relationship had been realigned corresponded to the emotions they experienced. After using a similar procedure to the Ruth, Otnes & Brunel (1999) study described above, participants were asked to quantify the extent to which ten different emotions had been experienced during the gift-receipt episode on a Likert scale from 1 (not at all happy, sad, guilty, etc.) to 7 (very happy, sad, etc.). The textual data were content analyzed to classify perceptions of short- and long-term relationship outcomes, and ANOVAs were performed to assess the differences in emotions for each short-term and long-term relationship outcome. For example, among gift-receipt experiences that *strengthened* the relationship in the short term, the mean emotions across participants were love (5.33), Happiness (6.25), Pride (5.42), Gratitude (6.17), Fear (2.33), Anger (1.5), Sadness (2.25), Guilt (2.18), Uneasiness (2.42) and Embarrassment (2.25). For positive emotions in general, there were significant differences in means across the five types of relational outcomes in the short term $F(4,108) = 48.19, p < .001$ and in the long term $F(4, 108) = 28.05, p < .001$. The authors concluded that experiencing multiple emotions such as happiness, love, and gratitude, and a low level of negative emotions is fundamental to positive relational outcomes in gift receipt. In line with costly signaling theory, if the recipient experiences positive emotions as a result of receiving the gift, meaning that the gift signaled qualities of value to the recipient, she is likely to act favorably, and the relationship between the giver and the receiver is likely to be positively affected.

Because the roles that men and women play in the gift exchange process may be quite different, and because we believe men and women may attend to different aspects of any given exchange, we would expect males and females to consider different types of gift exchanges to be the most memorable. In a study exploring gender differences in the meaning of memorable gifts, Areni, Kiecker, and Palan (1998) asked business students from the United States and Northern Europe to describe in writing a particularly memorable occasion when they were either the giver or the receiver of a special gift. They were also asked to describe their relationship with the other individual(s) involved and the nature of the gift, providing as much information as was necessary to convey the gift exchange's special importance (Areni et al., 1998). An interpretive analysis of the texts was used to identify themes in the exchanges, and ten themes emerged: Personal history, Helping others, Surprise as value, Secrecy/deception, Sacrifice as value, Planning everything to a tee, Family tradition, Symbol of the relationship, Trust/Responsibility & Perfect thing. Three judges then independently coded each text according to the gender of the writer, whether he or she was the giver or receiver, and the presence or absence of each of the ten themes. Correspondence analyses were then performed separately for each type of relationship (romantic partners, parents-children, grandparents-grandchildren, siblings, and friends and kin) and eight gift exchange profiles emerged including one role (giver or receiver), a specific gender, and two or more of the ten identified themes.

Among the forty-seven narratives that were written about an exchange with a romantic partner, 23 were written by females, 24 by males. Although they expected the opposite, the authors found that four of the five gift giving themes that focused on the experience of the recipient depicted women. In the context of sexual selection theory, this is not surprising, as

discussed above, because we expect that women would have adapted to pay close attention to the details of the gifts they receive and their feelings associated with the gifts.

In women's memorable gift exchange stories, it was found that both European and American women frequently described instances when they received a gift that demonstrated sacrifice on the part of their romantic partners (Areni et al, 1998.) According to Belk and Coon (1993), women may be attracted to romantic gestures that men make because they signal a long-term commitment to the relationship. As discussed above, long-term commitment certainly benefits women, from an evolutionary perspective, in terms of fitness for themselves and their offspring. Areni et al (1998) also found that a man's failure to demonstrate a sacrifice often caused women to interpret a gift as a lack of intimacy or a problem in the relationship. This illustrates what we would expect when a man offers a gift to a woman that she does not consider to have been sufficiently "costly" to him in energy or time. In this instance, the female may be less interested in continuing the relationship because she realizes she may not be able to rely on the signal, since because it is not costly and thus easier to fake, it may not be honest. Alternatively, it may be honestly signaling qualities that she does not value, such as aloofness or fear of commitment.

Males' roles in gift exchange. There are specific types of emotions, cognitions and behaviors that we would expect from males that are distinct from what we would expect from females if gift giving indeed evolved to serve a costly signaling function for mate selection and retention. A male acts as the signaler, and as such he uses gifts as costly signals of his underlying qualities. This can be either in the form of what the gift itself may say about his attributes, or through what the details of the gift exchange-- including the manner of prestation, the understanding of the recipient's preferences, or the symbolic meaning behind the gift-- say

about his underlying qualities. A male is most successful in this endeavor when he is skilled in choosing and presenting a woman with a gift that she finds pleasing in some way and that matches her preferences.

In a study discussed above, McGrath (1995) noted that male respondents linked gifts to romantic relationships with some frequency. Givers sought to deepen and reinforce a relationship, and recipients assessed whether a relationship should continue based upon the gift received. Specific gifts like lingerie or diamond rings communicated a desire for intimacy or further relationship development, and gifts such as flowers or stuffed animals signaled that the giver wants to continue developing the relationship. According to McGrath, males' use of gift giving is understood by all and accepted to be a form of courtship behavior, yet females do not have a comparable set of signals to express their willingness to participate in a romantic relationship through the use of gifts. It is clear, then, that a male's ability to present a female with a gift that she finds pleasing in some way and that signals qualities in the male that she esteems highly is a valuable talent and can potentially enhance a male's fitness.

In the Areni et al. (1998) study of gender differences in the meaning of memorable gifts described above, they found that men were the focus of two of the three giver profiles. This too suggests that men's experiences regarding gifts tend to be focused upon their roles as recipients. Areni et al. examined exchanges with romantic partners in more detail, and, consistent with the predictions of costly signaling theory, they found that in romantic partner exchanges there was the clearest division of gift exchange roles for males and females. Among the ten themes which emerged from the narratives, the two themes that were most prominent for men in the role of gift giving to romantic partners were "planning everything to a tee" and acquiring the "perfect thing." Planning everything to a tee reflects the idea that the giver spent a great deal of time and

energy meticulously arranging every detail of the acquisition or presentation of the gift, and that the recipient's understanding of this makes her appreciate the gift even more. A man who can make the gift giving experience memorable to a woman by planning every detail to suit her preferences is clearly signaling his willingness to spend this time and effort. It is therefore by definition an honest signal, since planning everything to a tee requires time and effort-- something that cannot be faked.

In gift giving instances coded with the theme "perfect thing," something about the gift made it perfect for the receiver, either because she had wanted the gift for a very long time or because for some other reason, no other gift could possibly have brought the receiver as much joy. Areni et al (1998) found that the special nature of gifts described as the "perfect thing" was often due to the giver having special, advanced knowledge of the preferences of the receiver. As costly signaling theory would predict, the gift functions well as an unfakeable signal of quality in a sexual selection context when the male successfully gives a gift to the female that matches her preferences and tastes. Clearly, a man that succeeds in giving a woman a gift that she deems the "perfect thing," is likely to improve his chances of gaining mating access, evolutionarily speaking, or, in modern times, of gaining favor in her eyes, and an enhanced likelihood that she will consider him as a partner.

If men's gift giving evolved so that they could signal invisible qualities of themselves to potential mates, it is possible that men would experience subjective psychological changes that are consistent with this motivation when they imagine themselves giving a gift to a woman versus another man. Gould and Weil (1991) found that men and women differ in the distinctions they make between giving gifts to same sex and opposite-sex individuals. Gould and Weil asked a group of undergraduate students to imagine themselves in a two different gift giving roles:

giving to friends of the same sex and giving to friends of the opposite sex. For each of these situations, participants completed measures of gender focus, which assessed what individuals focused on and thought about with respect to gender when they were asked to imagine themselves giving a gift to a same sex or opposite-sex friend (Gould & Weil, 1991). They also were asked to assess their feelings when comparing the two gift giving experiences, in terms of whether they thought more about the feelings of the same-sex person or the opposite-sex person. Participants also completed the Bem Sex Role Inventory (BSRI), which in addition to other personality variables offers subscales about sex role type, including femininity and masculinity.

Results showed that men's self-perceptions varied more between the same-sex and opposite-sex giving roles. That is, males tended to increase their scores on the femininity scale of the BSRI and decrease their masculinity scores when thinking about giving a gift to the opposite sex as opposed to the same sex. The same was not true of women. While this may sound counterintuitive, it is explained by the researchers that on the BSRI, femininity is synonymous with "expressiveness", while "instrumentality" means masculinity. They explain that males on average may have more of a problem being expressive with the same sex than females do, but that when they are interacting with women, men become more expressive. Females varied less in their approach to gift giving as a result of whether it was to a male or to another female. They explain that women do not have cultural norms proscribing them from intimacy and affectivity with same sex friends the way men do (Bukowski, Nappi, & Hoza, 1987).

An alternative explanation for these findings, in terms of costly signaling theory, is that when a male offers a gift to a woman, he has a lot invested in trying to communicate aspects of his true self effectively through the gift, and it therefore benefits him to render himself more expressive. When a male offers a gift to a female, even when it is only to a friend, he may be

unconsciously trying to signal his high quality through the gift he chooses. Among our ancestors, it was perhaps unlikely that men and women were “just friends.” Inevitably in any interaction between males and females there was likely to have been an element of “attempting to attract,” particularly on the part of a male, who has nothing to lose fitness-wise from trying to convince as many females as possible to mate with him. Given this, and assuming that a man is biologically predisposed to signal underlying quality through gifts, he would also have evolved to develop a strong desire to make a positive impression on any female to whom he is giving (or imagining to give) a gift. Conversely, it is likely that women have less need than men do to vary their feelings in general about giving a gift to members of the opposite sex because women have not evolved to use gifts as signals of their viability as a mate to the same degree as have males.

Conclusion

Costly signaling theory has become an important aspect of evolutionary biology over the last several decades. Extensions of this theory into the realm of human behavior have been fruitful as well, and they have been increasing in frequency. In the present review, we have outlined the basic principles of costly signaling theory, illustrated their operation among animals (with an emphasis on sexual selection contexts) and have demonstrated how the theory has been applied to human social behavior. The major contribution of the present review, however, was an effort to extend costly signaling theory into the realm of human gift giving in a sexual selection context.

Many of the findings about male and female behaviors during gift exchange can be explained by costly signaling theory. To enhance their own fitness, we propose that males have an interest in advertising their hidden qualities to females, and they do this through costly and elaborate signaling displays. One way in which males engage in costly displays of their qualities

may be through the gifts they provide to females. Females appear to actively receive and decode the information that the gift conveys, and use the resultant messages as reliable signals of one or more qualities of the donors. It is the costliness of the signal that makes it reliable to the female. Using the information they receive from the gifts to make assumptions about the underlying qualities of the male, females make choices about whether to consider the donor as a mate. If he provides her with gifts that signal qualities that she values and that accurately reflect her preferences, she is more likely to act in the best interest of herself and her future offspring and choose him as a mate. Ultimately, both parties benefit from the male having sent the signal.

An argument can be made that in humans, a low quality man who comes from a wealthy or resourceful family can provide a good courtship gift to a woman and potentially successfully obtain her affections. In this context, it could be argued that kin altruism is at work to make the gift a dishonest signal of the man's own quality and thus bring about problems in the future for a woman who is fooled by the dishonest display. However, if his family is interested in providing gifts to a potential mate in order to snare her, one can hope those resources that the woman is ultimately hoping to procure for her offspring will continue to be forthcoming from his family in the future.

Although it is difficult to prove that costly signaling is the appropriate explanation for the existence of gift giving in romantic relationships, it has certainly been shown to be a plausible explanation for why gift giving may have evolved as a practice between potential mates. In particular, it may be the penchant of most scholars to assume that gift giving can be explained better with the theory of reciprocal altruism (e.g., see Ridley, 1996) or with economic models (e.g., see Baumeister & Vohs, 2004). However, it is our perception that costly signaling also provides a plausible account for gift giving—particularly in courtship contexts. It might be

particularly fruitful for future research to examine whether gift giving in sexual selection contexts can be explained more fully with reciprocal altruism or with costly signaling theories.

It is rather remarkable how little effort has been focused by psychological theorists and researchers on human gift giving. Herein we have tried to organize the gift giving literature around the theory of costly signaling, but it is better to view the present review as an initial effort to begin a line of inquiry than an attempt to summarize an active field of research that has already generated a wide range of empirical observations. Gift giving has been both understudied and under-theorized. It is hoped that the present review will help to encourage more intensive efforts on both of these fronts.

References

- Appell, G. N. (1965). *The nature of social groupings among the Rungus Dusun of Sabah, Malaysia.*
- Areni, C. S., Kiecker, P., & Palan, K.M. (1998). Is it better to give than to receive? Exploring gender differences in the meaning of memorable gifts. *Psychology and Marketing, 15*, 81-109.
- Baumeister, R., & Vohs, K. (2004). Sexual economics: Sex as female resource for social exchange in heterosexual interactions. *Personality and Social Psychology Review, 8*, 339-363.
- Belk, R.W., & Coon, G. S. (1993). Gift giving as agapic love: An alternative to the exchange paradigm based on dating experiences. *Journal of Consumer Research, 20*, 393-417.
- Beltramini, R. F. (2000). Exploring the effectiveness of business gifts: Replication and extension. *Journal of Advertising, 29*, 75-78.
- Bird, R. B., Smith, E. A., & Bird, D. W. (2001). The hunting handicap: Costly signaling in human foraging strategies. *Behavioral Ecology & Sociobiology, 50*, 9-19.
- Bliege Bird, R. L., & Bird, D. W. (1997). Delayed reciprocity and tolerated theft. *Current Anthropology, 38*, 49-78.
- Bukowski, W. B., Nappi, B. J., & Hoza, B. (1987). A test of Aristotle's model of friendship for young adults' same-sex and opposite-sex relationships. *Journal of Social Psychology, 127*, 595-603.
- Buss, D. M. (1989). Sex differences in human mate preferences: Evolutionary hypotheses tested in 37 cultures. *Behavioral and Brain Sciences, 12*, 1-49.

- Buss, D. M., & Schmitt, D. P. (1993). Sexual strategies theory: An evolutionary perspective on human mating. *Psychological Review*, *100*, 204-232.
- Caplow, T. (1982). Christmas gifts and kin networks. *American Sociological Review*, *47*, 383-392.
- Camerer, C. (1988). Gifts as economic signals and social symbols. *The American Journal of Sociology*, *94*, Supplement: Organizations and institutions: Sociological and economic approaches to the analysis of social structure, S180-S214.
- Cheal, D. (1986). The social dimensions of gift behaviour. *Journal of Social and Personal Relationships*, *3*, 423-439.
- Cumming, J. M. (1994). Sexual selection and the evolution of dance fly mating systems (Diptera: Empididae; Empidinae). *Canadian Entomologist*, *126*, 907-920.
- Darwin, C. (1971). *The descent of man and selection in relation to sex*. London: J. Murray.
- de Waal, F. B. M. (1997). The chimpanzee's service economy: Food for grooming. *Evolution and Human Behavior*, *18*, 375-386.
- de Waal, F. B. M., & Berger, M. (2000). Payment for labour in monkeys. *Nature*, *404*, 563.
- Dorsch, M., & Kelley, S. (1994). An investigation into the intentions of purchasing executives to reciprocate vendor gifts. *Journal of the Academy of Marketing Science*, *22*, 315-327.
- Feingold, A. (1990). Gender differences in effects of physical attractiveness on romantic attraction: A comparison across five research paradigms. *Journal of Personality and Social Psychology*, *59*, 981-993.
- Getty, T. (1998). Reliable signaling need not be a handicap. *Animal Behaviour*, *56*, 253-255.
- Gould, S. J., & Weil, C. E. (1991). Gift-giving roles and gender self-concepts. *Sex Roles*, *24*, 617-637.

- Grafen, A. (1990). Biological signals as handicaps. *Journal of Theoretical Biology*, *144*, 517-546.
- Itkonen, T. I. (1948). *The Lapps in Finland up to 1945 Vol. 2*. Porvoo, Helsinki: Werner Söderström Osakeyhtiö.
- Lack, D. (1940). Courtship feeding in birds. *Auk*, *57*, 169–178.
- Malinowski, B. (1978). *Argonauts of the Western Pacific. An account of native enterprise and adventure in the Archipelagoes of Melanesian New Guinea*. London: Routledge & Kegan Paul.
- Mauss, M. (1970). *The Gift: Forms and functions of exchange in archaic societies*. London: Routledge and Kegan Paul.
- McAndrew, F. T. (2002). New evolutionary perspectives on altruism: Multilevel-selection and costly-signaling theories. *Current Directions in Psychological Science*, *2*, 79-82.
- McGrath, M. A. (1995). Gender differences in gift exchanges: New directions from projections. *Psychology and Marketing*, *12*, 371-393.
- Prendergast, C., & Stole, L. (2001). The non-monetary nature of gifts. *European Economic Review*, *45*, 1793-1810.
- Ridley, M. (1998). *The origins of virtue: Human instincts and the evolution of cooperation*. New York: Penguin.
- Rothstein, S. I., & Pierotti, R. (1989). Definitions and the genetic bases of beneficent behavior. *Ethology and Sociobiology*, *10*, 453-456.
- Ruth, J. A., Brunel, F. F., & Otnes, C. C. (2004). An investigation of the power of emotions in relationship realignment: The gift recipient's perspective. *Psychology and Marketing*, *21*, 29-52.

- Ruth, J. A., Otnes, C. C., & Brunel, F. F. (1999). Gift receipt and the reformulation of interpersonal relationships. *Journal of Consumer Research*, 25, 385-402.
- Saad, G., & Gill, T. (2003). An evolutionary psychology perspective on gift giving among young adults. *Psychology and Marketing*, 20, 765-784.
- Schram, L. (1932). *Marriage among the T'u-jen of Kansu (China)*. Shanghai, China: Catholic Mission Press.
- Sherry Jr., J. F. (1983). Gift giving in anthropological perspective. *Journal of Consumer Research*, 10, 157-168.
- Simpson, J. A., & Gangestad, S. W. (1992). Sociosexuality and romantic partner choice. *Journal of Personality*, 60, 31-51.
- Smith, E. A., & Bliege Bird, R. (2003). Costly signaling and cooperative behavior. In Bowles, S., Boyd, R., Fehr, E., & Gintis, H. (Eds.), *Moral sentiments and material interests: On the foundations of cooperation in economic life*. Cambridge, MA: The MIT Press.
- Smith, E. A., Bird, R. B., & Bird, D. W. (2003). The benefits of costly signaling: Meriam turtle hunters. *Behavioral Ecology*, 14, 116-126.
- Smith, E. A., & Bliege Bird, R. L. (2000). Turtle hunting and tombstone opening: public generosity as costly signaling. *Evolution and Human Behavior*, 21, 245-261.
- Smolar, A. (2002). Reflections on gifts in the therapeutic setting: The gift from patient to therapist. *American Journal of Psychotherapy*, 56, 27-45.
- Stein, H. (1965). The gift in therapy. *American Journal of Psychotherapy*, 19, 480-486.
- Thornhill, R., & Alcock, J. (1983). *The Evolution of insect mating systems*. Cambridge, MA: Harvard University Press.

- Trivers, R. L. (1971). The evolution of reciprocal altruism. *Quarterly Review of Biology*, 46, 35-57.
- Trivers, R. L. (1972). Parental investment and sexual selection. In B. Campbell (Ed.), *Sexual selection and the descent of man 1871-1971*. (pp.136-172). Chicago: Aldine.
- Vahed, K. (1998). The function of nuptial feeding in insects: A review of empirical studies. *Biological Reviews*, 73, 43–78.
- Veblen, T. (1899). *The theory of the leisure class*. New York: Macmillan.
- Weary, D. M., & Fraser, D. (1995). Signaling need: Costly signals and animal welfare assessment. *Applied Animal Behavior Science*, 44, 159-169.
- Wooten, D. B. (2000). Qualitative steps toward an expanded model of anxiety in gift-giving. *Journal of Consumer Research*, 27, 84-95.
- Zahavi, A. (1975). Mate selection: A selection for a handicap. *Journal of Theoretical Biology*, 53, 205-213.

Footnotes

¹It is important to note that the two above-mentioned kinds of gifts (i.e., expensive vs. inexpensive, preference matching vs. not preference matching) are not mutually exclusive, just as the traits of social status/resourcefulness and caring/loyalty are not mutually exclusive. Any gift simultaneously has the power to convey information on both of these dimensions (and possibly others as well.) In fact, it may be misleading to think of gifts as sending only one signal. Part of the reason why gift giving is so ubiquitous in society may be that gifts have the ability to convey multiple signals of the givers' qualities at the same time. Camerer (1988) offers this as another explanation for the inefficiency of gifts: This inefficiency is the social price one pays for buying gifts that signal more than one thing at once. This is an important point to make because clearly, whether a gift matches a woman's preferences or it doesn't, it is also signaling something through its cost, and vice versa. Unlike giving \$50 in cash, which signals nothing more than \$50 worth of "willingness," giving \$50 worth of underwear, poetry or sushi signals \$50 worth of willingness, but also signals something else about the donor's characteristics or feelings about the recipient at the same time. (Camerer, 1988.) The inevitable inefficiency that comes from an artifact that can symbolize more than one abstract concept may, therefore, also help to explain the pervasiveness of gift giving.