"So many men, so little time."

"Ten men waiting for me at the door? Send one of them home, I'm tired."

~ Mae West

CHAPTER 13

The heart has its reasons: Social rationality in mate choice

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Mae West's well-known attributes, which made her a sex-symbol of the 1930s, brought her an embarrassment of riches when it came to mate choice. As a result, she acquired first-hand knowledge that a lot of choice is not necessarily a good thing when time and mental (and physical!) energy is finite. The insightfulness of Mae West's witty observations, however, was not understood by psychologists and mate choice researchers for quite some time, as they have tended to view mate choice through the lens of a utility-maximization framework. But as Mae West appeared to know, mate choice involves more than just considering all the options available and, for each one, weighing up their mate value with a view to selecting the option with the highest utility. The specific circumstances in which an individual encounters their mate options may influence *how* she chooses and, ultimately, *whom* she chooses. In particular, the choice environment may affect the cues we pay attention to, how we combine them and, ultimately (and significantly), our reproductive fate. Whereas there is an already large and still-expanding body of research investigating and debating which cues are important when looking for a mate (e.g., Buss & Barnes, 1986; Buston & Emlen, 2003; Fletcher, Simpson, Thomas, & Giles, 1999; Li, Bailey,

Kenrick, & Linsenmeier, 2002; Li & Kenrick, 2006; Lippa, 2007; Todd, Penke, Fasolo, & Lenton, 2007), relatively fewer studies have focused on how mating-related judgments and choice behavior change as a function of the choice environment. In this chapter, we aim to consolidate the current state of knowledge regarding choice environment effects on mating behavior in order to better ground the discussion of how people end up with the wives, husbands, boyfriends, or girlfriends they do, in the wide range of situations afforded by the modern social world, including online and speed dating.

Our thesis is that mate choice is adapted to the choice environment in which it is made. Across many choice domains, humans are not passive victims of the whims of the local environment. We are sensitive to changes in the environment and adapt our judgments and choice strategies accordingly, thereby exhibiting ecological rationality (Gigerenzer, Todd, & the ABC Research Group, 1999; Todd, Gigerenzer, & the ABC Research Group, 2011) and social rationality—the topic of this volume. Like Sedikides, Ariely, and Olsen (1999), who suggest that in mate choice "preferences are developed in an on-line... manner" (p. 123), we promote the view that mating-related judgment and choice depend very much on the environmental conditions facing the chooser, while also being shaped by the past recurring conditions in which these behaviors evolved. From this perspective, mate choice is neither wholly adventitious nor entirely determined by lawful choice (as discussed by Lykken & Tellegen, 1993), but rather, it is some combination thereof. To substantiate this perspective, we describe anthropological, sociological, and psychological research showing that human mating-related judgments and choice are context-sensitive in meaningful ways. In particular, we show how the cues and strategies used in mate choice are influenced by environmental structure, considered first at the population level (in

terms of cultural, physical, and biological factors) and second at the level of individual choosers (in terms of the specific options available and others' opinions of those options). We then focus in depth on one important aspect of the mate choice environment in specific modern settings and its impact on heuristic and cue use: the number of potential mates available.

We do not focus on a specific choice heuristic and how it operates in one social environment versus another; rather we show how the undeniably social decision making involved in mate choice can only be understood in terms of the particular rich environment within which such decisions are made. Mate choice certainly relies on heuristics, typically simple and sometimes non-compensatory combinations of cues that make one individual seem more attractive as a mate than another, combined with stopping rules that limit the search for information about potential mates as well as the search for new potential mates themselves (Miller & Todd, 1998). The main way that the mate choice heuristics considered in this chapter differ from one another is with respect to cue prioritization—and hence, the main issue we explore here is choice environment and its impact on which cues are used by individuals choosing mates.

One important manifestation of differences in cue use in mate choice is embodied in the notion of a mating tactic. Humans are generally believed to be characterized by a mixed mating strategy, allowing both males and females to decide to invest more time, money, energy and other resources into pursuing a long-term mating tactic—monogamously committing to a partner—or a short-term mating tactic—having uncommitted affairs and sexual liaisons with different partners (Gangestad & Simpson, 2000; Penke & Asendorpf, 2008). Due to their inevitably higher minimal investment in reproduction (Trivers, 1972), women generally have a

stronger tendency towards long-term tactics than men (Schmitt, 2005), but the variance in both sexes is usually large and allows for factors that influence individual differences in mating tactic decisions (Gangestad & Simpson, 2000), including the ecological and social factors we will discuss. Mating tactics are intimately intertwined with mate preferences and hence with the cues that are used in mate choice heuristics: Men and women pursuing more of a short-term mating tactic show much stronger preferences for cues of physical attractiveness, overall good phenotypic condition and indicators of genetic fitness, whereas individuals pursuing long-term mating tactics are more willing to trade these qualities off for cues of attachment security, warmth, commitment, and the ability and willingness to provide for children (Penke et al., 2007; Simpson & Oriña, 2003). We will refer to these combinations of cues used via the two different mating tactics at various points in this chapter.

Before providing evidence for our thesis about the sensitivity of mate choice to the structure of the social environment in which it is made, we would like to emphasize that the environment to which we refer is *external* to an individual, in contrast to an individual's *internal* environment which also can impact mating behavior (e.g., hormonal changes across the menstrual cycle—see Thornhill & Gangestad, 2008). Additionally, our focus is on the initial phase of the mating ritual, in which an individual — assuming that she or he can exert independent choice — first assesses his or her attraction to a potential mate. This phase is crucial: No mate choice can happen without it.

Influences of the population-level environment on mate choice

We begin our review of environmental effects on mating-related judgment and choice by starting with the impact of structures of the environment facing a population of mate seekers (as opposed to structures facing each individual differentially), considered on a socio-anthropological scale. There is a great deal of evidence indicating that men, on average, prefer women who are young(er) and physically attractive (both cues to fertility), whereas women, on average, prefer men who are older and have a high earning capacity (cues to resources; Buss, 1989, 2003; Lippa, 2007). Research also shows, however, that these and other mating-related preferences and strategies are sensitive to cultural, historical, physical, and biological aspects of the choice environment in the following ways.

Variation in gender equality

The just-described sex differences in mate preferences are significantly reduced when one takes into account the relative degree of resource access men and women have in a given culture: Women in relatively gender-egalitarian cultures are markedly *less* likely than those in relatively patriarchal cultures to prefer older, resource-rich men (Eagly & Wood, 1999). If a given cultural environment is conducive to mothers being economically and socially self-reliant, the adaptive value of adopting a long-term mating tactic (i.e., wherein an individual makes a monogamous commitment to one person) is reduced for women, as they are then less dependent on men when it comes to raising children. The International Sexuality Description Project, a large cross-cultural study, yields support for this environmental influence on mating tactic use (Schmitt, 2005a). Across 48 nations, women's increasing access to political power and financial resources was positively associated with women's (but not men's)

greater short-term mating tactic use (i.e., their tendency to engage in sexual

relationships without commitment; Penke & Asendorpf, 2008). The one exception for

men was with respect to wage equality: Increasing wage equality between the sexes

was associated with men's greater short-term mating tactic use. These results suggest

that people, particularly women, adjust their mating tactics and consequently their

mate choice preferences and cue use to their economic environment.

Variation in resource distribution

Relatedly, anthropological research indicates that the structure of the

environment influences whether a cultural group is polygynous versus relatively more

monogamous, which in turn has direct consequences for the cues used by women

choosing a mate. A cultural group's mating system has been shown to depend on

what is called the polygyny threshold (Orians, 1969): If the environment is structured

such that a woman would have greater reproductive success by mating with an

already-mated man (versus a bachelor), then polygyny will ensue. The overall amount

of resources monopolized by men rather than women, combined with the variance in

the quality of the territories that males occupy, predict whether this threshold will be

met. Borgerhoff Mulder (1990) studied the pastoralist Kipsigis people of south

western Kenya, for whom the primary resources (land and cattle) are monopolized by

men. Their findings support the polygyny threshold model among humans. Men with

larger plots of land—where plot-size was positively associated with food-stuffs in the

household—had more wives (see also Pollet & Nettle, 2009). Importantly, when the

breeding opportunities afforded by larger plot sizes were statistically controlled for,

Kipsigi women preferred bachelors to already-partnered men. Borgerhoff Mulder

points out that for women there are reproductive costs to engaging in polygyny. Thus, it would seem that the default female preference is for pair-bonding, unless the tradeoffs that women face in their environment compel them to choose otherwise.

On the other hand, across foraging societies with little-to-no agricultural practice and where food is typically shared with all members of the community (a pre-agricultural way of life), the benefits to women of pair-bonding with men versus becoming a co-wife are less clear. This is because men and women contribute a relatively equivalent proportion of calories to the group and there is less variability among men in terms of their provisioning ability. Marlowe (2003) argues that, under these circumstances, "gene-shopping" plays a greater role in the type of relationships formed, although this strategy is also context-dependent. For example, he found that among foragers for whom gathering contributes more to the group's diet, polygynous relationships are more likely, whereas monogamous pairings are more frequent when fishing contributes more to the diet. This is because fish are less easy to share with the community (let alone with co-wives), due to their relatively small size and the effort involved in acquiring these calories. Thus, women in fishing-dominant groups depend more on men's monogamous attachment and, in turn, a man can only "afford" one wife. Among gathering-dominant foragers, however, women are able to choose a man based on his "genes", regardless of whether he already has wives (Marlowe, 2003). Although these findings are correlational and so do not specify a causal direction, combined with what we know about the cues that tend to be employed by those with long-term versus short-term mating tactics (as described previously), they provide suggestive evidence that the type of resources that are available and who monopolizes them may influence the particular cues used to guide mate choice.

Variation in sex ratio

Also giving credence to the contention that humans are sensitive to characteristics of the mate choice environment at large, Guttentag and Secord (1983) and subsequently Pedersen (1991) found evidence that human mating behavior is influenced by the *operational sex ratio* within a population, which is defined as the number of marriage-age men per marriage-age woman. Sex ratios are typically close to 1:1, but individual populations and sub-populations can greatly diverge with respect to this value (e.g., due to sex differences in deaths during wartime, in migration patterns, or in selecting engineering versus psychology as a university major). The common rationale behind sex ratio effects is that the "market value" of members of the rarer sex increases due to their shortage. Therefore, members of the more common sex face stronger competition for mates and are more willing to make compromises to the preferences of the rarer sex in order to increase their chances on the "mating market" (see also Simão & Todd, 2003). In line with this idea, the International Sexuality Description Project has shown that, among both men and women, short-term mating tactics and promiscuity tend to be more frequent in regions with more women than men, whereas long-term mating tactics and monogamy tend to be more frequent in regions with a surplus of men (Schmitt, 2005a). Thus, the rarer sex's preferences determine the mating tactics that are employed by everyone (on average). Furthermore, research shows that when women outnumber men, men possess higher standards regarding a long-term partner (for instance, by setting a higher acceptance threshold for stopping their satisficing search for a mate—Simão & Todd, 2003), because in this context they have greater leverage (Stone, Shackelford, & Buss, 2007). Notably, women in these same settings also raise their standards

regarding a long-term partner, perhaps in an effort to prevent being deceived by men seeking short-term relationships (Stone et al., 2007; although it is unclear exactly how raising standards facilitates deception avoidance). These studies indicate that not only the cues used, but also the stopping rule for making mate choices, can vary as a function of the choice environment, broadly construed.

Variation in environmental harshness

Impact of the physical environment. Mating tactics of individuals in a population may change as a function of the surrounding physical environment as well. When the physical environment is harsh and demanding (e.g., due to food or other resource scarcity, extreme temperature, war, or physical dangers—although stressors such as pathogens, parasites and toxins might have different effects, as discussed below), children will benefit greatly from the support of both parents. According to *strategic pluralism theory*, the adaptive value of long-term mating strategies, where both partners collaborate and are available to support their children, increases in such harsh environments (Gangestad & Simpson, 2000). Indeed, the International Sexuality Description Project found that long-term mating tactics were more frequent in populations with low standings on developmental indices, such as low life expectancy and high rates of infant mortality, child malnutrition, low-weight births, and teenage pregnancies (Schmitt, 2005a).

Because women bear greater risks during reproduction due to their greater minimal parental investment (Trivers, 1972), they should be more responsive to indicators of how much support they might obtain, including signs of environmental harshness (Gangestad & Simpson, 2000). Men, on the other hand, have a much

smaller minimal parental investment, which makes a short-term mating tactic markedly more efficient for them than for women. Apparently as an evolutionary consequence of this, men have a general tendency to favor a short-term orientation whenever possible (Schmitt et al., 2003), but will divert to a long-term orientation if they lack such opportunities (Penke & Denissen, 2008). Thus, males' selection of mating tactic may be more responsive to social opportunities on the mating market, whereas female tactics may be more responsive to environmental harshness and other non-social factors (although both sexes react to all these environmental cues to some degree). This line of reasoning also has received support from the International Sexuality Description Project, which found that cross-cultural variations in sex differences in mating tactics were mostly due to women adapting their mating behavior to the local environmental conditions, whereas men were relatively less affected (Schmitt, 2005a).

Since the threats of environmental and economic harshness can be ameliorated by increased cooperation and mutual support within and between families, these aspects of environment structure might also explain cross-cultural differences in who chooses an individual's long-term partners: the individuals themselves or the family system (as in "arranged marriages"; Apostolou, 2007). In other words, we expect arranged marriages to occur more frequently in environmentally harsh regions, because such marriages, by their very nature, necessitate cooperation between families, thereby shoring up support for the constituent families in the future. However, we are not aware of any studies that have tested this relationship.

Impact of the biological environment. Another form of environmental harshness that has been found to influence the cues used in mate choice is the prevalence of

biological stressors that could have detrimental effects on people's physical growth and development. Such stressors include pathogens (viruses, bacteria, parasites) and toxins. It is thought that people differ in their genetic ability to overcome or buffer developmental stressors, which, in turn, leads to individual differences in physical attractiveness and related qualities (i.e., greater ability to overcome stressors leads to better overall condition, health, and fertility—Fink & Penton-Voak, 2002; Polak, 2003). Environments with high rates of stressors affecting development will highlight these genetic differences, such that, as the stressor load increases, those with a buffering, stressor-resistant genetic make-up ("good genes") will develop normally towards a good overall condition, whereas those who lack such beneficial genetic factors will exhibit less developmental stability and possibly worse life outcomes. As a consequence, in an environment with many biological stressors, possessing mate choice heuristics that focus on indicators of genetic quality that are transmittable to the next generation yields the highest evolutionary benefits. In line with this reasoning, studies have found stronger preferences for cues of physical attractiveness in pathogen-laden environments (Gangestad & Buss, 1993; Gangestad, Haselton, & Buss, 2006).

In seeming contradiction to the above implications, however, recent research has discovered that unrestricted sociosexuality—that is, a relatively short-term mating tactic—is *reduced*, and thus, long-term mating tactics are more common, in countries with higher rates of HIV/AIDS, even after controlling for cultural differences in economic indicators (Barber, 2008; Schaller & Murray, 2008). For this particular biological stressor, however, having fewer partners and being more committed to those partners is an effective way of reducing the risk of contracting these diseases (Seal & Agostinelli, 1994). Importantly, Barber also showed that when HIV/AIDS

rates and some other competing ecological factors such as sex ratio, GDP, and maternal self-sufficiency (i.e., gender equality) were statistically controlled, higher rates of other infectious diseases (e.g., malaria, bird flu, typhoid) led to a more *unrestricted* sociosexuality among women, whereas men's sociosexuality remained unperturbed. Barber proposed that women in these countries employ a short-term mating tactic in the service of identifying men with good genes and, in particular, those who are likely to possess heritable disease resistance. The finding that women have a stronger preference for male attractiveness in high pathogen environments supports Barber's explanation, as does research showing that the rate of non-sororal polygyny (where the co-wives are unrelated to one another) increases in such environments, especially when population density is high (because polygynous men demonstrate health and dominance; Ember, Ember, & Low, 2007; Low, 1990).

To conclude, from our review of the literature thus far, it is clear that mate choice depends very much on aspects of the population's cultural, physical, and biological environment, such as maternal self-sufficiency, the types of resources available and to what extent these are monopolized by one sex, the operational sex ratio, and different forms of environmental harshness (see also Cronk, Chagnon, & Irons, 2000; Pasternak, Ember & Ember, 1997; Schmitt, 2005b). Also, it appears that female mate choice may be more responsive to non-social environmental factors including resource availability and environmental harshness than is male mating behavior. Finally, it is important to note that the observed sensitivity to environmental conditions is typically adaptive for the chooser—that is, individuals choose mates using cues and tactics that work well given the particular environment structure they face.

Influences of the individual-level environment on mate choice

Let us zoom in now to the individual's environment and its impact on cues and tactics used in mate choice, considered via the lens of psychology. How does someone's *immediate* social environment—in contrast to the more global cultural and physical environment—impact their individual mating-related preferences and judgments, and does it do so in socially rational, adaptive way?

Variation in the set of available options

Simple aspects of the options available in one's mate choice environment can affect the decisions made, as shown in the following experiment (Sedikides, Ariely, & Olsen, 1999): People were given a choice between two potential mates, Eligible *A* and Eligible *B*, described on the criteria of handsomeness and articulation. *A* scored higher than *B* on handsomeness and *B* scored higher than *A* on articulation. The choosers' preferences were shown to be affected by the presence or absence of a third "loser" option (or decoy), who was inferior to Eligible *A* on handsomeness and equal to *A* on articulation (so that *A dominates* the decoy), while being better than Eligible *B* on handsomeness and worse than *B* on articulation. Specifically, introduction of the decoy shifted participants' preferences from indifference (50:50) towards Eligible *A*, the mate that dominated the decoy. This result replicates a phenomenon known as the "asymmetric dominance effect" (or "decoy effect") in consumer choice (e.g., Huber, Payne, & Puto, 1982).

This phenomenon is usually interpreted as an indication of irrationality, no matter the choice domain, as it violates one of the key principles of normative decision theory—the independence of irrelevant alternatives, in this case the dominated decoy (Chernoff, 1954; Fishburn, 1973). However, is such behavior irrational in the social mate choice context? Sedikides et al.'s study does not specify the psychological mechanism responsible for their mate-related asymmetric dominance effect, but consumer research suggests that people choose the option that dominates the decoy, in part, because the presence of the decoy makes the attribute on which the decoy is lacking (relative to the dominating option)—in this case, handsomeness—more salient to the chooser, thereby altering the chooser's cue prioritization in the implementation of their choice heuristic. Increasing salience of the dominating cue may also result in people selecting the decoy-dominating option because they find it easier to justify this choice to others (Simonson, 1989). Given the importance of social networks and the flow of mate-relevant information through them, accountability, or making decisions one can explain and defend to those around us, is a crucial feature of social rationality in this context (Gigerenzer, 1996). Thus, selecting the mate according to the feature that stands out and is easy to justify is not irrational. As Lerner and Tetlock (1999) point out in their review of the effects of accountability on social judgments and choice, the inaccuracy costs that (sometimes) go along with choosing the accountable option may be more than offset by the personal benefits of facilitating smooth social and political interactions, especially if the chooser's goals are social in nature.

A similar local-environment effect of the array of options on mating judgments was demonstrated some time ago in a more prosaic form, namely through the influence of television shows. Kenrick and Guitierres (1980) asked men to rate the

physical attractiveness of a potential blind date. Immediately beforehand, some of these men had watched *Charlie's Angels*, a television show featuring three very attractive women, whereas men in a control group watched a different program earlier that evening or no TV at all. The men who had been exposed to the "Angels" rated their potential blind date as significantly less attractive than did the men in the control groups. Further studies revealed that men—but not women—were also likely to downgrade the physical appearance of their real-life partner after looking at images of attractive, opposite-sex nudes (Kenrick, Gutierres, & Goldberg, 1989). Although a more recent study by Mishra, Clarke, and Daly (2007) failed to replicate this same contrast effect, they did find that men (but not women) devalued their current romantic partner after interacting with a member of the opposite sex who smiled and behaved warmly towards them. The researchers speculate that men interpret such "proactive" behavior as an indicator of sexual accessibility, which is another attribute that men find attractive in potential (short-term) mates (Penke, Todd, Lenton & Fasolo, 2007; Schmitt et al., 2003; Trivers, 1972).

Even though exposure to more physically attractive or sexually accessible men does not lead women to devalue their partners, they are not immune to similar contrast effects: Women have been shown to rate their current partners less favourably after being exposed to socially dominant men (Kenrick, Neuberg, Zierk, & Krones, 1994). Social dominance is related to status and earning potential — mate attributes that tend to be more important to women (Buss, 1989; Greitemeyer, 2007). Women have been found to be even more susceptible to such contrast effects when in the fertile phase of their menstrual cycle (i.e., estrus): In this state, women's commitment to their partners weakens when evaluating other men as potential sex partners (Thornhill & Gangestad, 2008). Together, these findings suggest that men

and women are both subject to contrast effects induced by the local social environment of possible mates when judging their partners, though these effects are evinced with respect to different cues for each sex. Clearly, attraction is environmentally labile: What looked good yesterday may not look so good today and, of course, vice versa.

Is this susceptibility to local environmental context a good thing or a bad thing in mate choice? Ancestrally, being able to adapt to a new social environment, for instance after a migration or other contact with a new group, would have helped direct us toward appropriate new mate possibilities. In the modern environment, however, such adaptiveness may present problems. For instance, Kenrick and Guitierres (1980) suggest that the men in their study did not take into account the fact that the attractive women seen on *Charlie's Angels* were drawn from a "different universe of discourse" (p. 137). That is, exposure to the attractive women on TV may have unrealistically changed men's perceptions regarding the pool of options available to them in their own local environment, as if the "Angels" were viable, real-life potential mates. Mismatch theory (e.g., Eaton, Konner, & Shostak, 1988; Nesse & Williams, 1994; Tooby & Cosmides, 1992), which suggests that our minds evolved in past environments that diverge from the structure of modern environments in key ways, could account for why modern people may fail to account for the fictitious nature of the attractive "options" they are exposed to in laboratory experiments or in the media. In our ancestral environment, the only time we would have seen attractive others would have been when they were standing in front of us. And in that situation it would have been advantageous to be sensitive to differences in the reproductive potential of these locally available potential mates, just as the men in the *Charlie's Angels* study appeared to be.

Research using the visual adaptation paradigm (e.g., Little, DeBruine, & Jones, 2005; Rhodes, Jeffery, Watson, Clifford, & Nakayama, 2003) offers another proximal explanation for the "*Charlie's Angels* effect." In this paradigm, participants are exposed to a series of (usually facial) photos and are subsequently asked to rate a second set of photos on attractiveness. These studies found that after people were exposed to pictures that were systematically manipulated with regard to a certain characteristic (e.g., enlarged distance between the eyes), they rated new individuals with this same characteristic as being more attractive. Thus, standards of beauty may be subject to some degree of rapid updating based on the immediate, local environment. This finding is likely an example of a more general perceptual phenomenon whereby unusual or otherwise distorted objects that are looked at for some time will come to appear "right" or "normal" (Rock, 1966). With respect to the visual (or perceptual) adaptation observed in response to human faces, it has been suggested that adaptation facilitates something akin to perceptual "imprinting," that is, perceiving the faces around you as normal and attractive, and even more trustworthy than less familiar faces (Buckingham et al., 2006).

Variation in time pressure on choice

An individual's current local environment can also vary in how much time pressure it brings to bear on the task of mate choice. Correspondingly, research has sought to determine whether an increase in time pressure impacts mate preferences in predictable ways. This was cleverly manipulated via a looming deadline (Pennebaker, Dyer, Caulkins, et al., 1979), per that old country and western music adage that "the girls (and by extension, boys) all get prettier at closing time." Pennebaker and

colleagues asked men and women in bars to rate the attractiveness of patrons of the other sex at three points in time, the last being the bar's closing time. The researchers found that the attractiveness ratings increased over the course of the evening, offering support for the country music theory. Gladue and Delaney (1990) confirmed these findings (but, for contrasting results, see Sprecher, DeLamater, Neuman, et al., 1984), and further showed that increasing drunkenness over time did not explain the effect.

Still later research again confirmed the effect of looming closing time on people's perceptions of others' attractiveness (Madey, Simo, Dillworth, et al., 1996), but in this case, relationship status moderated the effect: Patrons who were currently in a relationship (dating or married) did not change their evaluations of the opposite-sex bar patrons through the course of the evening, but singles did. The authors interpret these results in terms of commodity theory (Brock, 1968; Brock & Brannon, 1992), which proposes that the value of an object increases with its scarcity (see also biological markets theory; Noë & Hammerstein, 1994). Accordingly, for singles, as the number of options decreases over the evening and/or the time available for "acquiring" the remaining options lessens, the options become more appealing. But those already in couples do not face the looming loneliness, so they are immune to the time pressure. Future researchers ought to investigate the exact heuristic mechanisms underlying the effect, for instance whether it operates via changes in satisficing search thresholds or actual shifts in attractiveness judgments. Still, the basic finding demonstrates that people, especially if they are in the market for a partner, are sensitive to time demands and/or supply limitations. And this sensitivity to local environment structure is adaptive as well: It is better—in terms of long-term reproductive output—to mate with the last person on the island (by finding him or her "attractive enough") than not to mate at all.

<u>Variation in social information</u>

Another aspect of one's local social environment that can impact mating judgments and choices is the kind of social information available about the mate choices of others. In particular, seeing that a competitor finds a potential mate attractive can raise one's own appraisal of that potential mate. Jones and colleagues (Jones, DeBruine, Little, Burriss, & Feinberg, 2007) demonstrated this among women by presenting them with pairs of photos of men, one of whom was shown being smiled at by another woman. They found that the men receiving positive attention from another woman were perceived as being more attractive, similar to the phenomenon of mate choice copying seen in other animals (cf., Brown & Fawcett, 2005; Galef & Laland, 2005). In a different experimental paradigm, Graziano and colleagues (Graziano, Jensen Campbell, Shebilske, & Lundgren, 1993) observed that when women participants had access to other women's attractiveness judgments of men, they used this information when forming their own attractiveness judgments of those same men, especially if the original judgments were negative. More recently, mate choice copying has been found for both men and women who viewed positive interactions between couples on speed-dates: Witnessing the interest shown by a competitor made the target member of the opposite sex more desirable than if the competitor was uninterested (Place, Todd, Penke, & Asendorpf, in press). Thus, humans—like Japanese quail (Galef & White, 2000) and guppies (Dugatkin & Godin, 1993)—copy the mate preferences of others. (See Gilbert, Killingsworth, Eyre, & Wilson, 2009, for another example of the influence of social information in a speed-dating context.)

Mate choice copying, an instantiation of the general category of behavior known as social imitation (Boyd & Richerson, 2001; chapter 17), may be adaptive for a variety of reasons. In particular, it is an efficient time-saving heuristic (Kokko, Brooks, McNamara, & Houston, 2003) that capitalizes on the information-gathering efforts of others (those who have already evaluated the potential mates) to yield good outcomes (in terms of the identification of fit mates; Stohr, 1998). Indeed, Waynforth (2007) found that human mate copying primarily occurs among sexually inexperienced women or among women seeking long-term (rather than short-term) relationships. This could be because a mate-copying female's offspring is expected to be genetically similar to those of other females that she copied, thus her offspring will be relatively competitive in their own dating market (as modeled by Sirot, 2001). Finally, mate choice copying may be seen as socially rational in that one's preferences and choices both stem from, and are clearly comprehensible to, one's social group.

Mate choice in modern social environments

The environment in which much modern human mate choice takes place is different from the mating environment that faced our ancestors—mainly in terms of the amount of information surrounding us. In this "information age" there are many more options in terms of possible mates that an individual can actually encounter, and much more information that can be gathered about each option to guide mate choice, from a wider range of sources (including other individuals and various institutions), than ever before. These differences between the ancestral and modern mate choice environments could lead to mismatch between our evolved mate choice mechanisms

and some of the settings in which they are currently applied (Eaton et al., 1988; Nesse & Williams, 1994; Tooby & Cosmides, 1992). But the mismatch also provides opportunities to reveal aspects of human mate choice mechanics that otherwise might go unnoticed. Next we turn to two modern mate choice institutions which can help elucidate how mate choice heuristics work by exploring their operation in new choice environments.

Mate choice in option-loaded online dating environments

Some research in consumer choice has suggested that people are attracted to greater choice but, when confronted with it, they may suffer from cognitive overload, choice paralysis, choice regret and possibly ultimately poor-quality choice (Iyengar & Lepper, 2000; Schwartz, 2004); other research has argued that people are good at filtering out the vast majority of options presented to us and making a choice nonetheless (see Scheibehenne, Greifeneder, & Todd, in press, for a review and meta-analysis). The challenges of potentially overwhelming choice are likely to be particularly pronounced on the Internet, where physical space limitations do not constrain the number of cars, books, CDs, kinds of wine, and the like to which consumers are exposed (Edwards & Fasolo, 2001). The same can be said of the Internet with respect to mate choice: Online dating presents people with lots of information about a multitude of potential mates. How do people deal with this plethora of data? Do they succumb to information overload, as they sometimes do when faced with "too many" products? Or do they prune down the choice set to a manageable size and get on with their decision? As an initial partial answer to these

questions, we have found that people do not appear to know if or when information overload will hit them.

People are conscious of and, crucially, have expectations about the effects of the environment on their mate choice process. In an experiment in which participants sought mates in a simulated online dating context (Lenton, Fasolo, & Todd, 2008), people wanted to have a considerable degree of choice, but at the same time they expected that—after a certain point—the costs of choosing a partner from a large array (e.g., greater regret, increasing choice difficulty) could begin to outweigh the benefits (e.g., more enjoyment of the process and increased satisfaction with the chosen option). However, people appeared to misjudge the extent to which the size of the option set would impact their feelings about the choice process and the mate selected. Our participants thought they would be more satisfied and less regretful, would experience greater enjoyment and, thus, would prefer selecting a potential long-term mate from approximately 20-50 options as opposed to both larger and smaller arrays of options. But in fact their choice experience did not generally confirm these expectations, because they were typically equally content with the smallest of choice sets as they were with the anticipated ideal. Why might people wrongly predict their feelings in this vital social domain?

Apart from the fact that people are not particularly adept at predicting the duration and intensity of future emotions (see Gilbert & Wilson, 2000), research suggests that choosers may engage in "strategy-switching" and change which heuristic they use when faced with a small or a large set of mate options (Lenton & Stewart, 2008), probably without even being aware of making such adaptations. As a result of strategy-switching, people may feel equally content choosing from a large option set as they do from a small one. In a study, women were presented with a small

(4), ideal-sized (24), or large (64) set of mate options to choose among, the latter of which should have been outside their preferred range (Lenton et al., 2008). The large option set was also likely to be beyond humans' ancestral number of available mates (based on Dunbar's, 1992, estimate of stable human social group size of approximately 150 individuals). As the option set size increased, participants were more likely to report having used non-compensatory search heuristics (e.g., elimination-by-aspects or a lexicographic rule—see chapter 1), as opposed to strategies that facilitate making trade-offs among attributes (e.g., weighted averaging). For example, when faced with choosing one potential mate from 64 different online profiles, these participants were more likely than those choosing from either 24 or 4 options to agree with the following statement:

> *I eliminated people who were not acceptable on a given criterion (e.g., attractiveness), one criterion at a time (e.g., "I first eliminated anyone who did not meet my standards on attractiveness, of those remaining I eliminated anyone who did not meet my standards for education," etc.).*

On the other hand, when faced with choosing one potential mate from 4 different online profiles, these participants were more likely than those in the other conditions to report:

> *I looked at every single aspect of each person's profile and tried to calculate which person had the best overall profile. I then chose that person.*

These findings are in line with information processing research (see Ford et al.'s, 1989, review) showing that people tend to employ compensatory choice strategies only when the number of options (and attributes) is relatively few and the problem is cognitively manageable. Additionally, the women reported having used *more* heuristics and were observed to spend less time examining each profile as the number

of potential mate options increased. These findings suggest that mate choice strategies are indeed influenced by the choice environment: As the mate decision becomes more cognitively demanding, people use simplifying heuristics that are likely to ensure that the mate chosen is above-threshold on at least the chooser's most-important criterion.

Choice environment and strategy use also interact with an individual's goals. This can plainly be seen when we consider how the above results were further qualified by participants' *mate standards*. Mate standards reflect the degree to which an individual's ideals concerning their future potential long-term mate are generally strong (high) as compared to generally weak (low). For example, a person with high mate standards may report wanting a partner who is *highly* attractive, and *highly* intelligent, and *very* witty, and so on, whereas a person with relatively lower mate standards may report wanting a partner who is at least *moderately* attractive, *moderately* intelligent, and *somewhat* witty. Mate standards differ from the aspiration level used in a satisficing search in that the latter is a threshold above which a choice is deemed to be acceptable (i.e., what is sufficient; Miller & Todd, 1998; Diecidue & van de Ven, 2008), whereas mate standards refer to the ideally-desired (rather than minimally-acceptable) levels of the criteria of interest. In Lenton and Stewart's (2008) study, participants with higher (versus lower) mate standards were more satisfied in the extensive choice condition, and less satisfied in the limited choice condition. Even though they were relatively more satisfied, the results also revealed that the extensive choice condition was not extensive enough for those with higher mate standards, as they reported wanting still more profiles to examine. The results also offer suggestive evidence that those with higher (versus lower) mate standards prefer to use compensatory strategies when faced with extensive choice. Thus, not only do people

adapt their strategy use to the particular choice environment in which they find themselves, but their personal goals also play an intervening role.

Although using non-compensatory choice heuristics and spending less time investigating each mate option can allow more options to be assessed and thus can be a good way to deal with large amounts of choice and information, it may have negative consequences as well. Edwards and Fasolo (2001) pointed out, for example, that the use of non-compensatory choice strategies is likely to result in the chooser winnowing out an "overall winner." That is, the overall best option is less likely to be chosen if a non-compensatory choice heuristic is used, because the chooser may not have seen how this person's good qualities compensated for his/her below-threshold qualities. Of course, what constitutes the long-term "best" option for any individual chooser is not something that can necessarily be determined using a utility-maximizing approach at a given point in time. Additionally, finding the single best mate is probably not an evolutionarily reasonable goal—finding a "good enough" mate, or satisficing, is often the more adaptive heuristic (Todd & Miller, 1999). Thus, the downsides of using a non-compensatory heuristic probably do not loom so large in the mating domain, and overall the best approach to dealing with lots of information about many mate options may be to avoid the overload and make choices with as little (but appropriate) information as possible.

Mate choice in option-loaded speed-dating environments

Besides online dating, another modern mate choice environment that presents people with a large array of simultaneous choices, but only little information about each, is speed dating. A typical speed-dating event involves a couple dozen women

meeting a couple dozen men throughout the course of an evening, with these "mini-dates" each lasting 3 to 7 minutes (Finkel, Eastwick, & Matthews, 2006; Kurzban & Weeden, 2005; Todd, Penke, Lenton, & Fasolo, 2007). At the end of a date, participants record whether they would like to see the other person again. If a man and a woman both want to meet again, they are given each other's contact information so they can set up a further "slow" (typical!) date. In short, speed dating offers a place for people to come together to attract and identify potential mates. Consequently, this modern human mating environment bears a notable resemblance to that of non-human animals that mate in aggregations, such as birds that gather in mating groups known as *leks* (Höglund & Alatalo, 1995). This allows us to compare human mate choice in this particular environment with that of other species, so that we can look for illuminating commonalities and differences.

Female mate choice in leks and other polygamous groups generally results in non-random variation in males' reproductive success (Höglund & Alatalo, 1995): Some males end up being extremely successful, whereas others obtain few, if any, mating opportunities. Such differences are fundamental to the theory of sexual selection (Darwin, 1874; Kokko, Mackenzie, Reynolds, Lindström, & Sutherland, 1999). *Mating skew* (or *reproductive skew*) is a measure of this inequality in mating success. Studies of mating skew in non-human animals show that dominant males across a range of species obtain more mating opportunities than would be expected by chance (Alberts, Watts, & Altmann, 2003; Constable, Ashley, Goodall, & Pusey, 2001; Höglund & Alatalo, 1995), yielding something approaching a "winner takes all" arrangement. However, a curious finding in a number of animal species is that this mating skew generally *decreases* as the number of mate options *increases*, with most explanations for this relationship focusing on the behavior of the to-be-chosen,

as we discuss more below (Cowlishaw & Dunbar, 1991, 1992; Kokko Mackenzie, Reynolds, et al., 1999; Widemo & Owens, 1995; but see also Charpentier, Peignot, Hossaert-McKey, Gimenez, Setchell, & Wickings, 2005). But does this also happen with humans? Taking advantage of the speed dating phenomenon, we sought to find out.

If humans behave similarly to non-human animal species when faced with an extensive set of options, we should find that mating skew—or unequal mating success—*decreases* as the number of opposite-sex speed-daters *increases*. What is meant by mating success in the speed-dating context differs, of course, from the definitions used in studies of non-human animals (e.g., number of visits, or copulation attempts). For our purposes, success is a function of the number of offers received, so that an individual who receives (proportionately) more "offers" from other speed-daters (i.e., indications that they would like to see that person again) is more successful than an individual who receives (proportionately) fewer or no offers. This measure of success has real implications: Everything else being equal, an individual who receives more offers will have a better chance of matching up with someone who accords with her or his preferences, and a higher probability of engaging in second dates or sexual relationships with other speed-daters, than an individual who receives fewer offers.

Biologists have put forth a variety of hypotheses to explain the negative relationship between number of mate options and mating skew, with most focusing on the behavior of the to-be-chosen individuals (usually males), such as the possibility of interfering with the mating behavior and success of competitors (e.g., the more males there are, the more they can interfere with each other's mating success and keep one "winner" from emerging). The hypothesis that we propose as most pertinent to the

human speed-dating context shifts the focus to the chooser, and suggests that mating skew declines for female choosers when there are many options because the female choice process is "imperfect," making it more difficult for them to identify accurately the "best" males in larger aggregations (Johnstone & Earn, 1999; Luttbeg, 2004). From a statistical point of view, in larger aggregations similar options are likely to be closer together in quality, making it more difficult to distinguish between them (because there are just more options crammed into the same quality range; Fasolo, Hertwig, Huber, & Ludwig, 2009). This fact, alongside the increased search costs incurred with larger numbers of mate options that pushes towards lesser search per option, also suggests that the accuracy of option assessment will be attenuated in larger aggregations. Thus, when presented with several (versus few) options, females may be more likely to confuse a lower quality male with a higher quality male and choose the former, leading to reduced mating skew.

Of course, human speed dating is distinct from non-human animal mating behavior in several ways. One such dissimilarity is that speed-dating events allow and even encourages participants to make and receive *multiple*, *concealed* offers. Consequently, higher-ranking speed-dating participants cannot identify and then block lower-ranking competitors from making offers to members of the opposite sex (regardless of the size of the speed-dating event), as happens in other species (Alberts et al., 2003). Conversely, lower-ranking speed-dating participants cannot band together to overthrow their higher-ranking competitors. Mate choice copying (discussed earlier), which can lead to mating skew when individuals adjust their mate preferences to match those of others (Dugatkin, 1992), is also irrelevant in the speed-dating context for the same reason: because offers (and preferences) are hidden, they cannot be copied. Furthermore, the rate at which offers are made across the dates

within a speed-dating session appears to be roughly constant and independent of the session size (Beckage, Todd, Penke, & Asendorpf, 2009), so that exhaustion or depletion is also not an important factor in the speed-dating context. In light of these differences from leks, the relationship between human option set size and mating skew in speed-dating sessions may turn out to be distinct from that typically found among non-human animals mating in aggregations.

To examine the magnitude and direction of the relationship between the number of mate options and mating skew in a human population, we obtained data from 118 speed-dating sessions run between 2003 and 2004 in seven different German cities from *FastDating*, a Munich-based company (Lenton, Fasolo, & Todd, 2009). Across these sessions, the number of male participants ranged from 8 to 34, and the number of female participants ranged from 7 to 36. Thus, there was substantial variation in the number of mate options to choose amongst. In the *FastDating* sessions, every participant of each sex met with every participant of the other sex, with each of these "dates" lasting approximately five minutes. Throughout the event, participants carried a scorecard on which they indicated whether they were interested in seeing each date again (yes or no). At the end of the speed-dating event, participants turned in their scorecards so that the *FastDating* organizers could compute all the matches. *FastDating* provided us with anonymized matrices for each event indicating who chose whom. From these, we could determine the number of "offers" ("yes" responses) each participant *made* as well as the number of offers each *received*.

We analyzed our data using five different measures of mating skew (Nonacs, 2003b), each based on distinct theoretical and statistical frameworks (Kokko et al., 1999; Nonacs, 2000, 2003a). Every skew measure was separately regressed on chooser sex, number of options, and their interaction. We also controlled for the

effect of the total number of offers made in the session and the interaction between chooser sex and the number of offers, to ensure that we were examining the relationship between the distribution (inequality) and the number of *options*, rather than the number of *offers* (or sex differences therein). First looking at overall patterns, we found that mating skew was reliably different from 0, indicating that there was indeed notable inequality in mating success across speed-daters. Also, female speed-daters' choices were more skewed than were those of male speed-daters, indicating greater mate choice agreement and hence greater potential effects of sexual selection at the hands of women as the choosier sex (Darwin, 1874; Trivers, 1972).

But how did speed-dating humans compare to other species in terms of the impact of option set size on mating skew? Four of the five mating skew measures were significantly *positively* correlated with the number of mate options available to choosers, rather than the negative relationship usually found for lekking animals. That is, for humans, the more potential mates available to the chooser, the *greater* the inequality in mating opportunity among the selectees. In still other words, when top-ranking speed-daters are among more competitors, they dominate even more and low-ranking speed-daters fare even less well. Notably, this positive relationship is equally true of both male and female speed-daters.

What might account for this surprising finding? First, recall our earlier contention that human mate choice—particularly in the speed-dating context—is different from that of other animals, making some of the standard explanations for mating skew inapplicable, such as the ability to influence the mating behavior of others. We might share this exception with other primate species, for which Kutsukake and Nunn (2009) argued that males are also limited in their ability to control the reproductive behavior of both competitors and potential mates. Still, they

found the usual *negative* relationship between the number of mate options and mating skew (Kutsukake & Nunn, 2006), casting doubt on this possible explanation for the human pattern.

Another potential, related explanation for a positive lek size–skew relationship was proposed by Charpentier and colleagues (2005), after they found that as the number of competing male mandrills increased, the more offspring the alpha male mandrill sired. They suggested that this result stems from there being increased competition among the subordinates in a larger group, which thereby reduces the level of competition directed against the alpha male. But again, this explanation does not hold in the speed-dating context where direct between-dater competition is non-existent.

As a consequence of the inapplicability of these explanations in terms of the *chosen* individuals, we must look instead for reasons for the obtained positive relationship between option set size and mating skew in terms of the impact of the choice environment on the *choosers* in the speed-dating context. As mentioned earlier, in the animal behavior literature, the negative relationship between lek size and mating skew has been explained in terms of choosers (i.e., females) making more errors and selecting lower-quality mates in larger aggregations. Setting aside for the moment the issue of whether mating skew is a valid indication of choice "accuracy" in the speed-dating context, we propose that choice strategy may be key to explaining the observed positive relationship between the number of speed-dating options and mating skew. Again, humans use different choice heuristics and different cues when faced with small rather than large choice assortments (Payne, Bettman, & Johnson, 1993; Ford et al., 1989). So like the participants facing an abundance of choice in Lenton and Stewart's (2008) web-dating study, we believe that participants in the

larger (versus smaller) speed-dating sessions were also more likely to use fast and frugal choice heuristics. Whereas in small speed-dating sessions participants could have had the cognitive capacity to assess and process multiple cues about each date, in large speed-dating sessions participants might have managed their potential choice overload by reducing the number of cues to which they attended (Fasolo, McClelland, & Todd, 2007).

In the speed-dating context, people typically have only a handful of minutes to decide whether they want to see someone again. Research indicates that choosers in this domain pay special attention to physically observable cues (e.g., body mass index, attractiveness), and less attention to harder-to-observe cues (e.g., faithfulness, desire for children; Kurzban & Weeden, 2005; Todd, Penke, Fasolo, & Lenton, 2007). With respect to the former type of cue, there is relatively high consensus among people as to what makes for an appealing mate (Langlois et al., 2000).

With changes in the number of available mate options, these patterns may have been exaggerated: Participants in larger sessions may have focused even more intently (or only) on easier-to-observe cues, such as physical attractiveness and weight, whereas in smaller sessions they may have felt more able to additionally assess both harder-to-observe cues (such as desire for children) and/or more idiosyncratic ones (such as personal taste in music or food). Thus, a difference in strategy and cue prioritization could explain why the distribution of offers became even more skewed when there were many opposite-sex speed-daters to choose from. Stated differently, the greater consensus regarding who were highly desirable and who were less desirable individuals (and hence the greater skew) in larger sessions could indicate that participants converged on easy-to-observe cues that reflect general preferences held in common by many people. In contrast, if participants in smaller sessions used

more cues, including cues reflecting idiosyncratic preferences, and if they furthermore had greater variance in their ability to assess the harder-to-observe attributes, then the distribution of offers across individuals could have become more spread out and less skewed in this context.

Indeed, a recent study supports this explanation (Lenton & Francesconi, 2010). We analyzed the choice behavior of 1,868 women and 1,870 men across 84 UK-based speed-dating events. Somewhat unusually for speed dating, before the event the participants also filled in an online self-report survey of their characteristics (e.g., height, weight, age, occupation, educational attainment, religion). Multi-level modeling of the data showed that the speed-daters paid more attention to cues that can be quickly and easily assessed (i.e., morphological cues, such as height and body mass index) as the number of speed-dating options increased, whereas cues that take longer to elicit or assess (e.g., occupation, educational attainment) were weighted more heavily when there were fewer options. Importantly, this finding was true of *both* male and female speed-daters.

Does this mean that non-human animals, unlike humans, do not (or cannot) employ different strategies and cues as a function of the local choice environment? Non-human animals *may* adapt their strategies as a function of context. For example, Bateson and Healy (2005) argue that animals—particularly those who select from aggregations of potential mates—will engage in comparative evaluation (e.g., comparing the mate currently in one's eyesight to the mate just seen) rather than absolute evaluation (e.g., comparing every potential to a cognitive ideal), because the former heuristic approach is more efficient, both cognitively and time-wise, for their environment. In terms of cues, we propose that the discrepancy between our findings and the animal literature is, instead, due to the smaller number of quickly-and-easily-

assessed cues that humans can access. Perhaps because of the less intense sexual selection they face and, thus, the smaller benefits of making costly displays, monogamous species possess fewer display traits and secondary sex characteristics than lekking or polygamous species possess (Candolin, 2003; Møller & Pomiankowski, 1993). Consequently, humans—being (modally) serial monogamists (Fisher, 1989)—are more likely than most of the other species studied to end up evaluating the same few easily assessed cues across an array of potential mates. Thus, speed-daters may mostly look at the potential mates' weight and physical attractiveness, the latter of which can be assessed from a face in as little as 13 milliseconds (Olson & Marshuetz, 2005). Indeed, there is evidence of (partial) redundancy between facial and bodily cues of attractiveness (Thornhill & Grammer, 1999), further reducing the need for assessing multiple cues. In contrast, for example, female white-bearded manakins (Pipridae family) could assess a male's plumage ornamentation, and/or the snapping sound made by his wing feathers, and/or his acrobatic display between the saplings, and/or the protrusion of his beard, and/or the behavior of other female manakins toward the male (Snow, 1962). When faced with many potential mates, some manakin females may only assess one or two of these cues. Because these cues are not necessarily positively correlated with one another (Candolin, 2003), the females are then more likely to make different choices from each other. Hence, their mating skew will be reduced when they have more options. For humans resorting to quickly-and-easily-assessed cues of just physical attractiveness and weight in larger assortments, this weakening of mating skew would not occur and in fact, we argue, is reversed.

There are other differences between humans and other animals that might also explain our distinct finding, but we will not expound upon these here (see Lenton,

Fasolo, & Todd, 2009). Let us just summarize by suggesting that even though the relationship between mating skew and option set size is positive for humans and negative for other animals, we believe that the underlying choice processes for humans and non-human animals are similar. They all rely on easily and efficiently assessable cues when choosing, especially when faced with many options—it is just that the type and quantity of cues that are available differ.

We return now to the focus of this chapter, namely the question of whether and how human mate choice is adapted the social and physical environment. Like the findings regarding online environments (Lenton & Stewart, 2008) and the cross-cultural and individual results that we reviewed at the beginning of this chapter, the speed-dating studies indicate that humans are sensitive to their choice environment, and adjust their mate choice strategies and cue use accordingly. When time and cognitive resources are limited, as they are more likely to be in larger speed-dating sessions, most people seem to use heuristics that restrict the set of cues they consider, and place greater emphasis on easily-assessed cues such as physical attractiveness and body-mass index, which leads the choosers as a whole to converge upon the same few chosen options.

Conclusions

Mate choice is a crucial adaptive problem, and one that evolution has shaped humans and other animals to solve well. Moreover, given that the environmental conditions in which a given human has to choose a mate can vary widely — across cultures, physical surroundings, and individual circumstances — we need mate choice mechanisms that can apply and adjust to these different environments and still make

good choices. As we have shown in this chapter, humans indeed demonstrate

extensive ecological and social rationality in this most social of domains, adjusting

their heuristics and cue use appropriately in response to different physical, biological,

cultural, and social environment structures.

In terms of ecological rationality, people shift between short-term and long-term

mating tactics, with concomitant shifts in the cues they use in their often-frugal mate

choice heuristics, in adaptive response to differences in the physical harshness of the

environment, the presence of biological stressors such as pathogens, and other

extrinsic factors such as time pressure. More research though is needed to assess the

validity, redundancy, and discrimination rate of the cues involved in the different

environments, so that these decision tasks can be described within the same

framework that has been developed for the study of ecological rationality in other

domains (Todd, Gigerenzer, & the ABC Research Group, 2011).

Even more, people show social rationality in their adaptive deployment of mate

choice heuristics and cues in the face of different social environments made up of

both potential mates and potential rivals for those mates (and even other important

social actors such as family members and friends, whom we have not considered in

much detail here). The sheer extent of our social environment, in terms of the number

of potential partners we have to choose from, leads to changes in the number and type

of cues we use in our search for mates. The ratio of potential mates to potential

competitors also dramatically alters the mating tactics used, whether towards shorter-

term or longer-term goals. And the preferences of our competitors can alter our own

preferences, through the simple social heuristic of mate choice copying. Finally, the

micro-level aspects of our own personal environment as well can have a large, and yet

predictably socially rational, influence: Who we encountered recently can alter our

evaluation of the next person we meet, or even our evaluation of our current partner, in a way that was likely adaptive for our ancestors when their social environment would change.

Not only the extensive laboratory and field research we have described in this chapter shows the social rationality of individuals on the search for a mate; the wisdom of real-life mate choice experts like Mae West demonstrates the same adaptive responses to both global and local environmental conditions. As the opening quotes of this chapter indicate, she was aware that the preponderance of potential mates available to her must lead to the use of fast and frugal decision mechanisms, and she knew that sometimes the current choice set must be pruned down to avoid overload.

The same sensitivity to the environment informs everyone's choices of husbands and wives, boyfriends and girlfriends. So the next time someone asks, "how did you two get together?," give some thought to both the immediate and wider social and physical environment in which you fell in love. It is likely that you made a good choice given the choice context in which you found yourself. In other words, the heart does have its reasons, and they are usually good ones.

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