Female Attractiveness: 
Evolutionary Psychology’s Unfinished Business 
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This article argues that many of the mechanisms that determine perceptions of female attractiveness are shaped by sexual selection, but the behavioral expression of these preferences is regulated by higher-order mechanisms of behavioral homeostasis. Until such problems as the nature and mechanism of female beauty are resolved, sociobiology must be viewed as an unproven methodology.

Key Words: Adaptationist theory; Animal analogues; Averageness; Beauty; Biological fitness; Clothing; Consilience; Darwinism; Evolutionary Psychology; Fashion; Fecundity; Goal-gradient hypothesis; Menarche; Monogamy; Neotony; Ovulation; Pedophilia; Pheromones; Selectionist theory; Sexual dimorphism; Sociobiology; Symmetry markers; Waist-to-hip ratio.

Sociobiology postulates that behavior in all species is determined by natural selection, which favors those behaviors that promote biological “fitness” – the ability to survive long enough to produce viable offspring. The establishment of sociobiology in the 1970s led to the creation of a school of thought in the 1990s which, under the slogan “consilience,” has attempted to unify the methods of the natural sciences. Some of these scholars, who term their research “adaptationist,” “Darwinian,” “evolutionary” (as in “evolutionary psychology”) or “selectionist,” believe that their methodology will entirely supplant previous schools of scholarship. It is no exaggeration to say that this view of the animal kingdom – not just of human beings – is currently predominant in the study of behavior.

Partisans of specific disciplines are often all too eager to dwell upon their successes, and proponents of sociobiology are no exception to this general rule. Nevertheless, even they have to admit that a number of sizable lacunae gape in their methodology. Prominent among them is the lack of a satisfactory explanation for female physical attractiveness. There is evidence that at least some perceptions of female physical attractiveness are similar in a wide range of cultural settings, and
that therefore ideals of feminine beauty are at least partially resident “in the genes” (Cunningham et al., 1995).

The lives of young women perceived by society as “beautiful” and “ugly” have very little in common. Even when a woman perceived as unattractive has a moderately more feminine figure and is healthier, more intelligent, more capable of producing offspring, and has a more useful moral outlook and personality, her opportunities for attracting suitors are still far more limited than those of her attractive counterpart. This evidently non-utilitarian phenomenon appears to make no sense in terms of evolutionary psychology. If sociobiologists cannot resolve so fundamental a question, this school of thought will, at the very least, require a radical reworking and, failing that, will be rejected as invalid or, at the very least, will be judged inadequate.

Studies show that symmetry, sexual dimorphism, and averageness are all found to be attractive across cultures (Rhodes, 2006). Supposedly, those faces that are considered attractive are those that reflect the mean of the population, i.e. the average. Still, “beautiful women” are generally found to be exceptional. If beauty is average, why do top models command huge salaries? As for the "beauty-is-symmetry" argument, the importance of beauty as a “symmetry marker” appears to be exaggerated for lack of other objective criteria. Faces – attractive and unattractive – are usually symmetrical. If one were to photographically reproduce the face of a physically unattractive person, mirroring one side with the other so as to achieve perfect symmetry, that person would still be physically unattractive. A perfectly symmetrical Frankenstein monster would still be a monster. A double but perfectly symmetrical cleft palate would be even worse than a single cleft palate. Conversely, a picture of one side of the face of a physically attractive person is still perceived as attractive and even beautiful, and many advertisements intentionally achieve this effect in displaying only a portion of the face. Photographically hybridize one side of an attractive face with an unattractive face on the other side, and no one will have difficulty choosing which side is beautiful and which is not.

Can it be that feminine beauty is totally explainable in terms of fecundity? Human males have been preprogrammed by evolution to be attracted most strongly to females who possess
the maximum remaining fertility (MRF). This means menarche (onset of menstruation) in combination with neoteny (the retention of immature characteristics into adulthood), thus insuring a maximum remaining fertility span. Such an analysis may not be politically correct, but slender, childlike limbs, slight chins, small noses, high-pitched voices, in combination with hormone-swollen buttocks, breasts and lips are the ideal pursued by glossy women’s magazines, fashion designers, and plastic surgeons. It’s what men want and what women want to be. Mature and young women alike use cosmetics and clothing with the goal of appearing as close to menarche as possible. A *New York Times* fashion journalist notes:

One criticism being leveled at the clothes offered on the runways is that they are skewed too young. The most prevalent trend favors dresses suitable for either anorexic Lolitas or Mia Farrow circa ‘Rosemary’s Baby.’ In either case, a pact with the devil is required. Trying to remain adolescent forever is doomed.... You hit 20, and you start developing a woman’s body (Treby, 2006).

In a widely publicized case a Brazilian model actually died in December 2006 from complications caused by anorexia. Although she was 5 feet 8 inches tall (1.72 meters) tall, she weighed only 88 pounds (40 kg) – a weight considered normal for a 12-year-old girl no more than about 5 feet (1.5 meters) tall.

Such a preoccupation would appear to run counter to men’s best genetic interest. We know that women cease ovulating and menstruating when their body fat falls below about 10% of body weight. This is the reason for amenorrhea in patients with anorexia nervosa and in overtrained female athletes (Frisch, 1987). Evidently, many men prefer slenderness as a marker of youth over efficiency of design.

Most men in traditional societies do indeed fit better into the sociobiological mold. In one cross-cultural study plump was considered beautiful in 24 societies, moderate in 19 and slender in 11 (Anderson et al., 1992). This study claimed that societies with a precocious food supply prefer plump women, and those with a secure food supply prefer thin women. However, even this adaptive explanation has been discounted by some researchers

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1 (http://www.msnbc.msn.com/id/15750402/from/ET/).

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(Ember et al., 2005).

But the sought-after look is more than just menarche; it aims at an even more specific target – imitating ovulation. Flushed cheeks, swollen lips, and large eyes set against a backdrop of delicate lace and silk are intended to create an impression of extreme vulnerability. Artificial pheromones – perfume – are added to the recipe to compensate for man’s feeble olfactory senses, not to mention his even more feeble resistance to manipulation.²

Wishing to enjoy the flattering treatment accorded their older sisters, pre-menarchal girls employ the arts of fashion and cosmetics so as to create the impression that they have already passed through menarche, and “beauty pageants” in which five- and seven-year old girls wear heavy makeup and adult, pointedly “feminine” attire are intended to astonish and titillate by exploiting this neotenous effect. The lead-in paragraph of an article in the Washington Post reads:

Ten-year-old girls can slide their low-cut jeans over ‘eye-candy’ panties. French maid costumes, garter belt included, are available in preteen sizes. Barbie now comes in a bling-bling style, replete with halter top and go-go boots. And it’s not unusual for girls under 12 to sing, ‘Don’t cha wish your girlfriend was hot like me?’ (Weiner, 2007.)

Ultra-thin models on fashion runways represent the same extreme pursuit of neotony – the prepubescent female figure crowned with a pointedly disdainful facial expression that bespeaks not merely sophistication but even satiation to the point of boredom. But American society’s attitude toward the sexualization of minors is decidedly mixed. In February 2007 the

² In contrast, male fashion is oriented to the aesthetic in a much more limited sense, clothing being intended to puff up male shoulders and render the man more imposing – a common practice among any number of species. By wearing expensive clothing the male is able to signal to females his ability to protect them and provide for their future offspring. Architecture – also an art form – fulfills much the same role as male clothing. The lines of the Turkish poem “A Soldier’s Prayer” by Ziya Gökalp (1876-1924) are illustrative:

The minarets are bayonets,
the domes helmets,
the mosques our barracks,
the believers our soldiers.

The Mankind Quarterly
Arizona Supreme Court ruled that the sentencing of a man to 200 years imprisonment for possession of 20 pornographic images of children was neither excessive nor disproportionate (Greenhouse, 2007).

Of course, neotony is at best only a partial answer. Fourteen-year-old girls are not all deemed by society to be equally pretty. Admittedly, perception of female beauty is arbitrarily intertwined with the passing fashions that surround it. The nature/nurture debate serves as an excellent illustration of the broad variability permitted within the framework of genetic imperatives. One study showed that private taste is about as powerful as shared taste (Hönkopp, 2006). Still, ancient Greek and Roman statues demonstrate a certain consistency of our concept of female beauty. Even Reubens’ fuller female figures are hour-glass in shape, displaying a low waist-to-hip ratio.

Light skin is an indicator for youth. In all races, women’s skin is lighter then men’s skin, possibly due to a heightened demand for vitamin D synthesis during pregnancy. Also, female skin tends to darken from puberty to menopause (van den Berghe and Frost, 1986). It has been proposed that for these two reasons men prefer a lighter-than-average skin tone in women, and that sexual selection is one reason for the light skin of races that evolved at high latitudes (Madrigal and Kelly, 2006).

In addition to youth there are at least three other features that have been found to be attractive across cultures: averageness, symmetry, and sexual dimorphism (Rhodes, 2006). Supposedly, those faces that are considered attractive are those that reflect the mean of the population, i.e. the average (Langlois et al., 1994). The common explanation is that many genetic conditions lead to unusual, non-average physical features, especially in finely structured parts of the body such as the face and also the hands. Averageness signals the absence of pleiotropic genetic defects that lead to other abnormalities in addition to atypical physical appearance (Rhodes et al., 2001). Sociobiologists describe humans as intuitive eugenicists who select their reproductive partners for genetic quality.

One question relates to the specificity of the averageness effect. If a preference for averageness evolved for the specific purpose of avoiding genetically challenged individuals as reproductive partners, there would be no reason to expect a preference for averageness in other domains. Actually, however,
people also prefer average dogs, wristwatches and birds. Therefore the preference for average faces seems to be an attraction to prototypical exemplars in general (Halberstadt and Rhodes, 2000).

A preference for symmetry has been described for both sexes. Deviations from perfect bilateral symmetry, technically known as fluctuating asymmetry, are thought to be due to developmental disturbances caused by environmental stresses. Symmetry is therefore a marker for developmental stability and resistance to environmental stresses. In other words, it could signal "good genes." (Little and Jones, 2003; Milne et al., 2003). But this general preference for symmetry might possibly also be explained as an incidental byproduct of the brain systems for visual recognition (Johnstone, 1994).

A preference for sexually dimorphic features is evident from everyday experience, for example the above-mentioned hourglass-shaped body with a low waist-to-hip ratio and robust breasts. Wide hips may well signal a wider birth canal, but breast size is considered unrelated to milk yield (Caro, 1987). These preferences can be explained in two ways. The traditional sociobiological explanation is that these physical features signal fertility and an adequate estrogen level, and the preference for them is caused directly by sexual selection (Jasien'ska et al., 2004). One objection to this explanation is that these preferences do not seem to be universal. For example, for American men the preferred waist-to-hip ratio is 0.7, and for Hadza hunter-gatherers in Africa it is 0.9 (Marlowe and Wetsman, 2001; Marlowe et al., 2005).

Sexually dimorphic features also include smaller-than-male body size and a high-pitched, melodious, voice. These are unrelated to reproductive capacity. A slight, gracile and undermuscle body build, universally perceived as feminine, can even detract from the woman’s reproductive and child-rearing duties. These features are merely signals for femaleness that can act as release stimuli for male mating behavior. Other animals also often show a preference for exaggerated release stimuli. For example, when a brooding female oystercatcher is offered a plaster egg twice the size of her own, she will happily incubate the plaster egg in preference to her own (Tinbergen, 1969). Perhaps big breasts are the human equivalent of an oversized plaster egg. This would imply that women evolved their large
burdensome breasts because of a design flaw in the male brain mechanisms for the recognition of femininity.

A model competing with Maximum Remaining Fertility (MRF) is Maximum Current Fecundability (MCF):

**Figure 1.** The age-dependence of female fecundability. From Woods (1994).

The age curve of apparent fecundability (scaled so the maximum value is one). Based on Bendel and Hua’s (1978) reanalysis of data from Taiwan (Jain, 1969a) and the Hutterites (Sheps, 1965). Estimates for ages 16–24, based on the Taiwanese data, pertain strictly to the first birth interval. For ages 25+, estimates are derived by an indirect method from data on birth intervals of all orders in the Hutterites.

Thus, the question is: is the human male more attracted to young females who over the course of their lifetimes will produce for him the largest number of offspring (the MRF model) or to those females who are most likely to be impregnated by him now (MCF).
Logical as such models may appear, their validity is put into question by the existence of homosexuality, which represents still another lacuna in sociobiology. (A hypothesis: perhaps it is simply the inevitable statistical tail of a Gaussian [normal] distribution?) Not only should homosexuality not exist, since it, at the very least, subtracts from reproduction, and at most prevents it altogether, it also makes a cult of youth, even though reproduction is irrelevant to the act. And, just as among heterosexuals, pedophile trends are sometimes evident (Silverthorne and Quinsey, 2000). If the above logic treating female beauty as signal of fecundity is valid, how is it that the removal of this logic produces the identical results?

Here the most plausible answer is that our gene pool contains pleiotropic genes that raise the likelihood of homosexuality, but do something useful in addition. They could for example raise intelligence, make women more maternal, sharpen men’s esthetic sense or make women more attractive. Perhaps most likely is a positive effect of “gay genes” on cooperation among males, which would be an advantage in societies where fathers have to negotiate with other men for the marriages of their children.

A second problem is evident in a 2006 study of Chimpanzee sexual behavior, which in theory ought to serve as an analogue to human behavior. Not only did male chimpanzees give no indication of particular susceptibility to youthful females, they even preferred older females (Muller, 2006). Within human society there is even a “niche” market in pornographic films featuring women in their fifties, favored by men in their twenties. (Still another “statistical tail”?) One hypothesis is that chimpanzees are more oriented toward short-term relations than are humans, and thus long-term fertility is not of significance. Nevertheless, as the authors concede, the discrepancy between majority human and chimpanzee sexual preferences has yet to be convincingly explained – by proponents of sociobiology, or by anyone else, for that matter.

Women’s fashions are certainly an art form, and they should be readily explainable within the framework of behaviorist and Darwinian psychological analysis. Intended to protect the wearer from cold and injury, clothing was originally strictly utilitarian in nature. Later, dress came to be used to identify the individual as a member of a specific community and to emphasize his or her
sexual identity and status within that society. Sonya Marmeladova in Dostoevsky’s *Crime and Punishment* is a prostitute and dresses in a fashion intended to signal her intentions. This may have been Russia, but it was nevertheless a Victorian epoch. How did a Russian prostitute in the second half of the nineteenth century signal her profession to her clients? Or, for that matter, how about Punic era Carthage or ancient Peking?

Female clothing and support garments replicate the shapes of a youthful (i.e. fecund) figure, and sexually distinctive parts of the body are not only emphasized, but partially exposed. All this conforms perfectly to behaviorist theory. The goal-gradient hypothesis, originally proposed by Clark Hull in 1932, states that the tendency to approach a goal increases with proximity to the goal (Hull, 1932). (When Hull tested his “hypothesis,” he found that rats in an alley ran progressively faster as they proceeded from the starting box to the food.)

A quite different strategy is pursued in traditional Islamic societies. A conservative Muslim women dressed entirely in black is attired like many a Christian nun who sees herself as a “bride of Christ.” Some married Hasidic women even shave their heads. When all is said and done, Conservative Jewry, Christianity, and Islam are actually closer to each other in both worldview and style than to their liberal co-religionists.

Having greater access than men to sexual opportunities, women have long practiced limiting supply. Thus, they are less inclined than men to engage in frank descriptions of the sexual act and more likely to decry depictions of nude bodies as “pornography.” By limiting access to sex, they are better able to coerce men into monogamy – a practice which runs radically counter to male biological urges. Thus, many Islamic women voluntarily – even enthusiastically – wear the *hajeeb*. For their part, men encourage traditional female dress codes for fear that their females may be impregnated by other males.

Still, even though clothing can perform such utilitarian functions as providing shelter and enhancing sexual attractiveness, these are functions essentially extraneous to artistic essence. The Russian Formalist critic Viktor Shklovsky once noted that, while samovars could be used instead of hammers to drive nails, this was not their intended purpose, nor was it the most productive way to employ them. In discussing
human female beauty in terms of evolutionary psychology, can it be that we are analyzing the functional qualities of a samovar to drive nails? Frankly, we are still at a loss to explain one of the most powerful drivers of human behavior. To rephrase a popular song, “What has beauty got to do with it?”

Romantic partners are indeed more similar in their physical attractiveness than expected by chance (Feingold, 1988). Physical attractiveness is only one trait that the brain computes into the mating value, and the most consistent sex difference is that men go for beauty and women for wealth (Pawlowski and Dunbar, 1999; Udry and Eckland, 1984). In the United States, where fatness is considered unattractive, poorly educated men have fatter wives than better educated men (Lipowicz, 2003).

The mechanism fits well into the view of a “modular” mind that is promoted by mainstream evolutionary psychology: a self-assess module computes one’s own mating value; a mate-assess module computes the mating value of a prospective partner; a comparator compares the two mating values; and the comparator feeds into a fall-in-love module. Similarity of mating value activates the fall-in-love module.

Even this is not the whole story. Not only are romantic partners similar with respect to mating value. They are also similar in specific domains that include, in addition to physical attractiveness, wealth and status, family commitment, and the prospect of sexual fidelity (Buston and Emlen, 2003). Birds of a feather flock together. This is known as assortative mating. It has been demonstrated for personality and intelligence, social attitudes, and political and religious preferences (Mascie-Taylor, 1988).

There is no compelling reason to postulate sexual selection as the ultimate cause of assortative mating, since like attracts like not only in romantic couples but in all human relations. Through empathy and cognitive perspective taking the behavior of a person who is similar to oneself is more intelligible and more predictable than the behavior of a dissimilar person. Therefore it is safer to stick with those who are similar to oneself.

Another source for the like-attracts-like effect has been proposed by Philippe Rushton. According to Rushton’s theory, which makes no sharp distinction between interpersonal attraction and altruistic disposition, both are extensions of kin-
selected altruism. Originally evolved for the support of blood relatives who predictably share some of one’s own genes through common descent (Hamilton, 1964; Silk, 2006), it was extended not only to non-relatives from one’s own breeding population or tribe, but also to those who are similar to oneself by mere chance (Rushton, 1989).

One possible objection to Rushton’s theory as a general explanation for similarity-based altruism is that similarity-preferring genes are selected only if altruism is directed selectively at other similarity-preferring altruists. This mechanism can contribute to the evolution of altruism toward altruists (reciprocal altruism; Trivers, 1971, 2006), but not altruism toward those who are similar to oneself in education, personality or social attitudes. As an evolved mechanism for sexual attraction it would lead to inbreeding (Bittles, 2005), which is rare as a group strategy, but not unknown – among Egyptian, European, and Inca royalty, and among entire historical Jewish communities.

**Summary and Conclusions**

The most salient conclusions from the evidence about female beauty can be summarized as follows:

1. Some elements of female sexual attractiveness are too universal to be non-genetic, and too specific to be explainable by mechanisms other than sexual selection. The universal preference for women of the most fertile age is the clearest example. Presumably this preference evolved because of the massive age-dependence of female fertility in our species and the resulting strong selective pressure.

2. Other traits (symmetry, averageness) are also esthetically pleasing in objects other than women. They originated as “perceiver biases” that arise incidentally from the mechanisms of sensory perception, and we need not postulate an origin through sexual selection. Also a preference for exaggerated female features (low waist-to-hip ratio, big breasts) most likely represents a general attraction to supernormal release stimuli.

3. Some elements of feminine beauty are culturally so variable that they are unlikely to be genetically hard-
wired. The preference for fat or skinny women is the prime example. The great variability of this preference is a continuing challenge for cross-cultural research.

4. Sexual attraction lies at the very core of sociobiology. To validate itself as a discipline, this school of thought must first resolve this fundamental task and only then move on to the more peripheral philosophical and ideological issues to which it lays claim.


**Comment by one referee on the foregoing:** In this article the author has tended to regard female attractiveness as synonymous with beauty. While it is arguable that this may have been the case at earlier stages of human evolution, this observer would suggest that at more complex levels of human culture, ideals of female *beauty* come to include values that are less directly related to sexual appeal. Thus, as our beauty pageants show, the delicate facial features that characterize the “Nordic ideal” have come to find favor amongst persons of various degrees of skin pigmentation, possibly because they suggest high intelligence and an advanced degree of evolutionary refinement away from the features that we associate with our more primitive primate origins.

The author correctly notes that prevailing Western concepts of feminine attractiveness, such as extreme body thinness, sometimes run counter to the sociobiological principle that female attractiveness should favor fecundity. We should remember, however, that although complex modern cultures can sometimes result in dysgenic behavior that runs counter to evolutionary principles, such deviant behavior can have no long term future. Sociobiology maintains that just as phylogenetic behavioral proclivities are honed by evolutionary selection, so disadvantageous cultural mutations have no better chance of long-term survival than disadvantageous biological mutations. Both are dependent on the survival of the community or

*The Mankind Quarterly*
subspecies that sustains them. Similarly, speciation has played a major role in the evolutionary progression from simpler to more complex forms of life; and amongst the more mobile life forms, notably birds and mammals, avoidance of interbreeding with other subspecies (which would frustrate speciation) has only been possible as a result of either geographic isolation, or the development of feral constraints that impel them to avoid physically dissimilar creatures – and a corresponding attraction to sexual partners that exhibit physical characteristics peculiar to their own subspecies. Thus, in a natural environment, most bird and animal subspecies find sexual attraction only within their own subspecies. We might well assume that evolving Homo shared these same impulses of attraction and avoidance, and that for mankind, also, sexual attractiveness originally had racial undertones, since any inclination to mate with members of other subspecies (or, indeed, with members of the same sex within their own subspecies) would have been a perversion, in that it would have resulted in a negation of the process of speciation.

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*Volume XLVII Number 3, Spring 2007*


The Mankind Quarterly
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*Volume XLVII Number 3, Spring 2007*
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