

# Romantic Love and Marriage



Gustav Klimt, "The Kiss"

*Let me not to the marriage of true minds  
Admit impediments. Love is not love  
Which alters when it alteration finds,  
Or bends with the remover to remove:  
O no! it is an ever-fixed mark  
That looks on tempests and is never shaken;  
It is the star to every wandering bark,  
Whose Worth's unknown, although his height be taken.  
Love's not Time's fool, though rosy lips and cheeks  
Within his bending sickle's compass come;  
Love alters not with his brief hours and weeks,  
But bears it out even to the edge of doom:  
If this be error and upon me proved,  
I never writ, nor no man ever loved.*

*William Shakespeare*

Above you find one of William Shakespeare's most famous sonnets. You may have heard it before; it is one of the most commonly seen poems in weddings and has been spoken by countless amorous youths. If you find yourself baffled as to what it means, however, you're not alone. Students seem to misunderstand Shakespeare more than any other writer. In this particular piece Shakespeare is attempting to define what may very well be indefinable: Love. It is a grand task. What does he have to say about it? According to him it does not "admit impediments," it is perfect and unchanging. It does not "bend" or "alter." Time does not affect it, and it will outlast everything, even death. It is an "ever-fixed mark." When it touches a person, it never leaves and strengthens (or haunts) him to the day he dies. He is so certain of this definition that he is comfortable staking his entire career on it.

But is this really what love is? Is it such a rigid ideal? Perhaps one of the most enigmatic parts of life, love seems to defy definition. Dictionaries take up full pages trying to hash out what it means. Philosophers have spent their entire careers, sometimes even lives in the attempt. There seems to be no single explanation for romantic love. Is what an elderly man feels for his wife at the end of his life different from what the young man feels for a woman he is about to propose to? Do the first few powerful relationships a teenager experience really contain love? Is there a difference between requited love and the love that remains even when its object doesn't return the affection?

Is love a biological process? Is it something that can be experimented with in a lab? The thinking may seem cold, but science is continually ascribing the different facets of love to hormonal shifts, brain patterns, or whatever physical entity they can. Some say we can't control who we're attracted to, the cocktail of hormones surging through our bodies dictates who we fall in love with. Perhaps our propensity for love is genetic. Some people fit easily into a monogamous role while others struggle to keep their eyes from wandering. Could this be something in our very DNA? Humans are one of the few animals who practice monogamy, what genes might we share with other animals who choose one partner for life?

As with any part of life that we all share, love is an interesting sociological phenomenon. While many claim vehemently that love transcends things like money and society, sociologists claim that, like everything else, love is affected by societal influences. The likelihood of you marrying someone far beneath your station is small, they say. You are choosing your mate from a small pool of people close to you in society.

Psychology also tries to explain love, but with a more personal approach. The way you think will determine who you love.

Love is also one of our favorite things to watch on television and in the movies. This is not new, it seems, classic art has been focusing on the topic since people began putting paint to cave walls or canvasses. One of the most common literary themes is love (if not the most common), the sheer volume of poems about love is so great that you could probably find it addressed in every single poet's repertoire. We like to sing about love, think about love, write about it and learn about it.

History is littered with stories of wars waged and countries forever changed simply for the love or possession of a woman. The catalyst in the birth of the Protestant religion was Henry VIII's split with Rome, widely believed to be over his desire to divorce his current wife and marry Anne Boleyn. Love has been the driving force in some of history's greatest accomplishments. Who knows where we might be today without the powerful sex drive of some of history's great men. It seems that ever since the brains of our early ancestors evolved to process complex thought, love has been foremost on our minds.

This chapter contains an attempt, though feeble; to further explore the complexities of love, affection, and its fulfillment in law and society: marriage. The subject permeates every discipline, and so we will address its affects in each one. Whether it is the chemistry of attraction in science, love's portrayal in great art and classic films, its place in the poetry of the greats, or its affect on history, love seems to be an ever present force.

Helen Fisher is a behavioral anthropologist and is the leading researcher on topics of romantic love. She's written several books on the chemistry of attraction including *The First Sex*, *Anatomy of Love*, and *The Sex Contract*. The following text is an excerpt from her book *Why We Love: The Nature and Chemistry of Romantic Love*. The content of this particular excerpt deals primarily with why we- humans both male and female - are attracted to certain members of the opposite sex and not others. The examples listed in the text (e.g. the natural propensity of humans to gravitate towards genetically similar individuals, and the importance of physical symmetry) are just a few of the many interesting facts about human attraction discussed in Fisher's book.

### *Do Opposites Attract?*

Nevertheless, "that first fine careless rapture," as Robert Browning called romantic love, is generally directed toward someone much like one's self. Most people around the world do feel that amorous chemistry for unfamiliar individuals of the *same* ethnic, social, religious, educational, and economic background, who have a similar amount of physical attractiveness, a comparable intelligence, and similar attitudes, expectations, values, interests, and social and communications skills.

In fact, in a new study of mate selection in America, evolutionary biologists Pete Buston and Stephen Emlen report that young men and women think of themselves as particular types of marriage partners and choose people with the same traits, ranging from financial and physical assets to intricacies of personality. If a woman is blessed with a trust

fund, for example, she seeks another from the upper class. Handsome men seek beautiful women. And those devoted to family and sexual fidelity select someone with these attributes. The mirror speaks. Men and women also gravitate to lovers who share their sense of humor, to those with similar social and political values, and to individuals with much the same beliefs about life in general.

Remarkably, scientists have established that many of these traits, including your occupational interests, what you do in your leisure hours, many of your social attitudes, even the strength of your faith in God, are influenced by your genes. So genetic types gravitate toward one another; we tend to be attracted to people like ourselves.

Anthropologists call this human propensity to be drawn to someone like yourself "positive assertive mating" or "fitness matching." The specific kind of person you actually choose, however, has been changing somewhat. The world is seeing more interracial marriages, for example. In the United States these weddings have increased some 800 percent since 1960. But even in this time of the global village, that fire in the mind is still most likely to ignite when you meet an unfamiliar man or woman who is quite similar to you ethnically, socially, and intellectually.

Like our attraction to unfamiliar people, this preference for partners like oneself is probably evolutionary baggage. Why? Because a fetus and its mother are foreigners to each other. If they share a similar chemical makeup, the mother will have an easier time carrying the infant in her womb. In fact, mates who are genetically similar experience fewer natural abortions and bear more and healthier babies.

It is not advantageous to be too alike, however. And humans seem to have evolved at least one mental mechanism to assure that we choose a partner who is slightly different—chemically at least. This discovery stems from what has become known as the “sweaty T-shirt” experiment. When women were asked to smell men’s sweaty T-shirts and report on which they thought were the most “sexy smelling,” they chose T-shirts of men with immune systems that were unlike but compatible with their own. Unconsciously these women were attracted to individuals who could potentially help them produce genetically more varied young.

So opposites attract—within the limits of one’s ethnic, social, and intellectual sphere.

### *Symmetry: The “Golden Mean”*

*Another biological taste we have inherited from the animal kingdom is our tendency to choose well-proportioned mates. Bodily symmetry can help to trigger romantic love, as the ancient Greeks theorized. Almost twenty-five hundred years ago Aristotle maintained that there were some universal standards of physical beauty. One, he believed, was balanced bodily proportions, including symmetry. This accorded with his high respect for what he called the golden mean, or moderation between extremes.*

Modern science supports Aristotle’s notion. Symmetry is beautiful—to insects, birds, mammals, all of the primates, and people around the world. Female scorpion flies seek mates with uniform wings. Barn swallows like partners with well-proportioned tails. Monkeys are partial to consorts with symmetrical teeth. If you walk into a village in New

Hechler

Guinea and point to the most beautiful man or woman sitting around the campfire, the natives will agree with you. And when researchers used computers to blend many faces into a composite "average" face, both men and women liked the averaged face better than any of the individual ones. It was more balanced. Even two-month-old infants gaze longer at more symmetrical faces.

"Beauty is truth, truth beauty," Keats wrote in his *Ode on a Grecian Urn*. Keats's words have puzzled many. But as it turns out, the beauty of symmetry does tell a basic truth. Creatures with balanced, well-proportioned ears, eyes, teeth, and jaws, with symmetrical elbows, knees, and breasts, have been able to repel bacteria, viruses, and other minute predators that can cause bodily irregularities. By displaying symmetry, animals advertise their superior genetic ability to combat diseases.

So our human attraction to symmetrical suitors is a primitive animal mechanism designed to guide us to select genetically sturdy mating partners.

And nature has taken no chances; the brain naturally responds to a beautiful face. When scientists recorded the brain activity of heterosexual men ages twenty-one to thirty-five as they looked at women with beautiful faces, the ventral tegmental area (VTA) "lit up." A similar response occurred in our scanning study: those subjects who gazed at photos of better-looking partners showed more activity in the VTA. And the VTA is rich with dopamine—the neurotransmitter that provides the energy, elation, focused attention, and motivation to win a reward.

Not surprisingly, symmetrical men and women often have many suitors to choose from. As a result, exquisitely good-looking women tend to marry higher status men, Jacqueline Kennedy Onassis being a crowning example of this matching process.

Highly symmetrical men also get reproductive perks. They begin to have sex some four years earlier than their lopsided peers; they have more sex partners and more adulterous affairs as well. Women also achieve more orgasms with symmetrical men, even when this relationship is not emotionally satisfying to them. And when a woman has an orgasm with a well-proportioned man, her orgasmic contractions suck up more of his sperm.

I suspect these sexual responses occur because as the woman looks at her symmetrical lover, the ventral tegmental area in her brain produces dopamine—which (in a series of interactions) triggers testosterone and enhances the sexual response.

Because symmetry enhances one's choices in the mating game, women go to extraordinary lengths to achieve it or at least a semblance of it. With powders they make the two sides of the face more similar. With mascara and eyeliner, they make their eyes appear more alike. With lipstick they enhance one lip to match the other. And with plastic surgery, exercise, belts, bras, and tight jeans and shirts, they mold their forms to create the symmetrical proportions men prefer.

Nature helps. Scientists have found that women's hands and ears are more symmetrical during monthly ovulation—a time when it is reproductively important to attract a man. Women's breasts become more symmetrical during ovulation too. Moreover,

Hechler

young men and young women are often quite symmetrical; we become more and more lopsided as we age.

### *"Waist to Hip" Ratio*

The golden mean of balance also applies to other bodily proportions.

To a group of American men, psychologist Devendra Singh displayed an array of line drawings of young women and asked which body types they found most attractive. Most chose women whose waist circumference was about 70 percent of their hips. This experiment was then redone in Britain, Germany, Australia, India, Uganda, and several other countries. Responses varied, but many informants favored this same general waist-to-hip ratio.

When Singh measured the waist-to-hip ratio of 286 ancient sculptures from several African tribes, as well as from ancient India, Egypt, Greece, and Rome, he found that all favored a ratio that was smaller for women than for men. And in a study of 330 artworks of Europe, Asia, the Americas, and Africa, some of which date back thirty-two thousand years, scientists found that most women were depicted with a waist-to-hip ratio of these same general proportions. Interestingly, *Playboy* centerfolds display these proportions, too, as do American "super-models." Even "Twiggy," the gaunt supermodel of the 1960's, had a waist-to-hip ratio of exactly 70 percent.

A woman's waist-to-hip ratio is largely inherited; it is produced by genes. Moreover, although it clearly varies from one woman to the next, this ratio adjusts during ovulation to come closer to 70 percent. Why has nature gone to such extraordinary lengths to produce

Hechler

curvaceous women? And why do men around the world appreciate this particular waist-to-hip ratio in women?

Most likely for an evolutionary reason.

Women with a waist-to-hip ratio of around 70 percent are more likely to bear babies, Singh reports. They possess the right amount of fat in the right places—due to high levels of bodily estrogen in relation to testosterone. Women who vary substantially from these proportions find it harder to get pregnant; they conceive later in life and they have more miscarriages. Egg-shaped, pear-shaped, or stick-shaped: differently shaped women also suffer more from chronic disease, such as diabetes, hypertension, heart disease, certain cancers, and problems with circulation. They are also prone to various personality disorders. So Singh theorizes that male attraction to a specific female waist-to-hip ratio is a natural preference for healthy, fertile partners. In fact, because this preference is so deeply enmeshed in the male psyche, men of all ages express this taste, even when they have no interest in fathering young themselves or are courting women who are past the age of reproduction.

Of course, men prefer other things in women, too.

The process of natural selection is a common place idea in our society today, one in which most of us put our faith into. We generally believe that the creatures roaming our earth now are the result of thousands of years of evolutionary improvements. But there are still plenty of creatures that seem to have actual deficiencies in certain areas. The author of the following article presents the aspect of evolution known as sexual selection and how sexual attraction could help explain some of nature's' seeming flaws.

### *A Most Private Evolution*

Maybe female seed beetles have their own what-the-bleep exclamation. Even for insects, it's difficult to imagine any other reaction to a male *Callosobruchus maculatus* beetle's sex organ, which has spikes.

"It jumps to mind as something quite dumb," says Goran Arnqvist, an evolutionary biologist at Uppsala University in Sweden, who for much of the past eight years has studied seed beetle sex.

Male beetles of several *Callosobruchus* species have sharp edges on their sperm-delivery organs. The females' ducts grow a bit of extra toughening but not enough to make sex safe from the risk of injury. After many tests, Arnqvist has concluded that the genital excesses aren't good for the species as a whole. These seed beetles would have less-damaging *sex*--and would produce more babies--if males lost their edges.

Discussions of evolution often glorify the beautifully apt forms: orchids with nectar recesses just the right length for the tongue-like structure of a certain moth, or harmless

Hechler

butterflies with the same wing colors as a poisonous neighbor. Yet the most dramatic examples of the power of evolutionary theory may come from the strange and ugly stuff--biology that seems too dumb to have been designed.

Trying to understand counterintuitive sexual parts and habits follows in the best of scientific traditions. As Charles Darwin worked on evolution, he pondered male phenomena that looked useless, or even harmful, for surviving. Outsized horns on male beetles puzzled him, as did male birds with gorgeous plumage.

Out of this consternation came his insight into a process he called sexual selection, which he distinguished from natural selection. There may be survival of the fittest, but there's also survival of the sexiest.

Today the sex-related selection process doesn't get much attention outside scientific circles, but it's a powerful tool for making sense of downright peculiar stuff. Arnqvist and other biologists are expanding Darwin's framework, exploring the counterintuitive aspects of sex from flirtation to family life. And theorists are discussing female behavior that Darwin never recognized, or perhaps just didn't care to discuss in print.

### **Not-so-natural selection**

When Darwin first put his full idea of natural selection into print, he knew it wasn't enough. In 1859, he argued in *On the Origin of Species* that organisms best adapted to their environment survive in greater numbers and leave more offspring than do their less fit neighbors. Thus more suitable traits gradually replace clunkier versions.

Yet antlers on stags and tails on peacocks could hardly be adaptations to the environment. Both antlers and tails may be so familiar that it takes a minute to summon a sense of their absurdity. They're huge. They must drain energy to produce. There's no way they improve agility in locomotion or foraging.

"The sight of a feather in a peacock's tail, whenever I gaze at it, makes me sick!" Darwin wrote in a letter to the botanist Asa Gray, albeit in a whimsical paragraph. Nauseated or not, Darwin was willing to step beyond survival of the fittest.

"He devoted a few pages in the Origin to introduce sexual selection as a sort of wild-oats younger brother of natural selection. Sexual selection, as Darwin formulated it in the sixth edition of Origin, depends "not on the struggle for existence in relation to other organic beings or to external conditions, but on a struggle between the individuals of one sex, generally the males, for possession of the other."

Antlers evolved as stag-on-stag weaponry for fights over a female, he argued. Males also compete in contests "of a more peaceful character," he wrote. Extravagant plumage, singing and what he called "strange antics," such as bird acrobatic displays, bedazzle a female into choosing one male over his rivals.

What's good for bedazzling can be bad for survival, of course. Darwin made a glancing allusion to the conflict in his 1871 work, *The Descent of Man, and Selection in Relation to Sex*. There he admits that sexy traits could be slightly harmful to the male.

### **Today's tales**

Harm may be part of the charm, although debate continues on how supersized, shimmery tails evolved. The year 2008 proved a lively one for peacock studies, as a long-term line of research met a challenge from a new one.

Three independent studies in the past 20 years have found that tails matter. For example, Marion Petrie of Newcastle University in England and a colleague turned the same birds from hotties to notties and back again by clipping some of the eyespots out of the males' tails and then reattaching the finery. The females probably weren't counting male spots, but were choosing males that displayed a greater density of spots, according to similar tests by Adeline Loyau, now at France's CNRS Moulis station.

Peahens' interest in eyespots could have arisen for no particularly practical reason, Petrie and Loyau speculate. Their idea draws on the concepts of sensory bias and sensory exploitation, which deal with an apparently arbitrary silliness at the heart of sexy traits. Sure, a blue spot now burns hot with allure. But biologists puzzle over why a purple stripe didn't evolve instead.

In this scenario, basic arbitrary-looking evolutionary directions (blue not purple; long tail, not wide eyes) actually were arbitrary as far as mate choice goes. For some reason that had nothing to do with reproduction, females might have tended to notice a particular color or shape or motion.

Let's imagine it was a blue spot. Males exploit that predisposition, as guys with even a modest dot attract extra female attention. If the female bias gets inherited along with male coloring, then off go the males in an evolutionary race for bigger, better, bluer blues.

Hechler

That kind of scenario might have begun the peacock's tale. At some point, the story goes, tails grew so fancy they posed a handicap for males. Growing the best tail or keeping it flossy or managing a little sprint despite its weight demanded energy or vitamin-rich food or something otherwise limited. And in animal communication, that's when fashion starts to mean something.

What's called the handicap principle comes from the Israeli biologist Amotz Zahavi, now retired from Tel Aviv University, who thought about how creatures judge each other's quality.

Suppose the peacock's tail signals, "Hey, honey. I'm the best bird, and you need me right now." Such a tail stays reliable as a badge of quality across generations only if good tails present a handicap that not all individuals can overcome, Zahavi suggested. A robust bird can pay the cost and still look good. A puny bird can't compensate for the loss, and looks like a second-rater. The tail signal honestly indicates quality.

A signal with no cost, Zahavi argued, means anybody could waggle a full rainbow rear. Everybody could signal "best bird." The signal would lose its utility and fade away over generations, or never evolve to begin with.

Petrie and others have been taking this signaling idea further, testing to see whether the tail might signal good genes or some true benefit for a female who mates with a showy male. It sure isn't help with the chores and the chicks. Peacocks do only the most basic task of fatherhood.

Hechler

In a jolt after years of research linking female preferences to tail feathers, readers of the journal *Animal Behaviour* were startled to learn last April that a seven-year study of feral peacocks in a park near Shizuoka, Japan, found no sign that females were choosing males based on their tails. Neither eyespot number, tail symmetry nor tail length correlated with a male's success or his health, reported Mariko Takahashi of the University of Tokyo and her colleagues.

Loyau, Petrie and two other researchers responded in the November issue with ideas about why the new study doesn't agree with old research.

For one thing, the researchers point out, the new study took place on the opposite side of the world. Other animal studies have recently detected what's called adaptive plasticity in mate choice, or differences in how various groups of females of the same species choose mates. What's a useful signal in one environment may not matter much in another.

Also, Loyau says, "If we really want to understand, we need to study peacocks in the wild."

One commentary isn't going to settle a matter that's been under study since it nauseated Darwin, though. The Japanese study's challenge to years of experiment, theory and assumption is "sure to prove controversial," predicts Louise Barrett, one of the journal's editors.

**For kicks**

Hechler

Plausible explanations for a dazzling but impractical tail don't make sense for injurious genital spikes. Beetle genitalia look more like instruments of war. The latest research suggests warfare may be the point.

In Darwin's writings, males fought males. Now researchers recognize that males and females clash too.

As Arnqvist puts it, "Unless you have perfect monogamy, there are conflicts of interest." When a male and a female can take different strategies in mating, their best interests often differ. What's good for the goose in terms of how often to mate, with whom and for how long probably won't be best for the gander.

Thus human scientists confront the question of how to spot battles of the sexes in other species. In a 2000 paper in *Nature* titled "Genital damage, kicking and early death," two researchers reported evidence that seed beetle mating might have more conflict than concord. Helen Crudgington and Mike Siva-Jothy of the University of Sheffield in England timed beetle mating that takes place on black-eyed peas. After about three minutes, females start slamming their hind legs against the male. A typical mating encounter lasts about four minutes.

When the researchers removed females' legs so they couldn't kick, males persisted around six minutes. The sexes appear to disagree about how much is enough.

Female beetles' kickoffs probably are not a way of reducing contact with wimpy males that can't stand a drubbing, Siva-Jothy says. Female seed beetles look as if they have genuine cause to minimize mating. The longer an encounter lasted, the more rips and tears Siva-

Hechler

Jothy and Crudgington found in the female reproductive tract. And as additional evidence of harm, females that mated only once during the experiment lived longer than females that mated twice.

Those harmful male sex organs in the beetles "look like medieval torture instruments," Arnqvist says. Yet such a device may not have evolved through any direct benefit of its power to injure. Instead, injuries are probably side effects, Arnqvist contends.

He and his colleagues have tested for potential direct benefits for the male, including what's called the "terminal investment." In a terminal investment, a mated creature facing an uncertain or shortened life span throws all resources and effort into the current batch of young. A dad with no guarantee he'll sire one of mom's future clutches will certainly benefit if he can get her to make an all-out investment in his offspring right then.

Exactly mimicking the damage of mating isn't possible, so Arnqvist and his colleagues inflicted other injuries, including body punctures or cuts on wings, after a group of females had mated. The injured females actually laid fewer eggs than intact moms did, so Arnqvist dismissed the idea of a terminal investment bonus for the males. Also, the damaged females tended to mate again sooner than usual, so the damage doesn't appear to be a roundabout way of foiling rivals.

To explain how the sharp edges of a seed beetle arose without direct benefits, Arnqvist proposes that some quirk of male physiology, such as an irregular surface to improve anchoring, injured females incidentally. The risk of such injuries favored females with tougher plumbing, which in turn favored spikier males. So seed beetle anatomy, he

Hechler

argues, could derive from an ongoing arms race between the sexes, even if the conflict harms the species.

Similar harm, and possibly arms races, could be smoldering far beyond seed beetles. "Being an entomologist, I know of hundreds of insect groups with male genitalia that have this appearance," Arnqvist says.

Some male insects deploy bundles of spines, knives and even full-fledged swords. Male bedbug organs look like a stiletto, and "they literally use it as a stiletto," Arnqvist says. Females' reproductive tracts do have external openings, but male bedbugs usually just stab through some spot in the body wall and let the sperm swim from there.

### **Duck difficulties**

Birds have evolutionary arms races too, says Patricia Brennan of Yale University. Most birds don't have insertable parts, achieving fertilization by the so-called cloacal kiss. It's just his-to-hers contact of cloacae, the all-purpose openings of reproductive and excretory systems. Male ducks, however, belong among the 3 percent of male bird species with a phallus; some duck organs extend 40 centimeters.

In the mallard and long-tailed duck, males deploy at unusual length "what looks like a weird tentacle with bumps and ridges," Brennan says.

Female duck anatomy hadn't received as detailed a look until Brennan spent some time in Tim Birkhead's lab at the University of Sheffield. Female mallards and long-tailed ducks have a correspondingly intricate reproductive tract "like a maze," Brennan says.