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Love and Attachments

No one can live happily who has regard to himself alone and transforms everything into a question of his own utility; you must live for your neighbour, if you would live for yourself.

—SENECA¹

No man is an island, entire of itself; every man is a piece of the continent, a part of the main.

—JOHN DONNE²

IN 1931, AT THE AGE of four, my father was diagnosed with polio. He was immediately put into an isolation room at the local hospital in Brooklyn, New York. There was no cure and no vaccine for polio at that time, and city dwellers lived in fear of its spread. For several weeks my father had no human contact, save for an occasional visit by a masked nurse. His mother came to see him every day, but that's all she could do—wave to him and try to talk to him through the glass pane on the door. My father remembers calling out to her, begging her to come in. It must have broken her heart, and one day she ignored the rules and went in. She was caught and sternly reprimanded. My father recovered with no paralysis, but this image has always stayed with me: a small boy alone in a room, gazing at his mother through a pane of glass.

My father had the bad luck to be born at the confluence point of three big ideas. The first was germ theory, proposed in the 1840s by Ignaz Semmelweis and incorporated into hospitals and homes with gradually increasing ferocity over the next century. When they began to collect statistics from orphanages and foundling homes in the 1920s, pediatricians came to fear germs above all else. As far back as records went, they showed that most children dropped off at foundling homes died within one year. In 1915, a New York physician, Henry Chapin, reported to the American Pediatric Society that out of the ten foundling homes he had examined, in all but one of them *all* the children had died before their second birthday.³ As pediatricians came to grips with the deadly effects of institutions on young children, they reacted in a logical way by launching a crusade against germs. It became a priority in orphanages and hospitals to isolate children as much as possible in clean cubicles to prevent them from infecting each other. Beds were separated, dividers were placed between beds, nurses retreated behind masks and gloves, and mothers were scolded for violating quarantine.

The other two big ideas were psychoanalysis and behaviorism. These two theories agreed on very little, but they both agreed that the infant's attachment to its mother is based on milk. Freud thought that the infant's libido (desire for pleasure) is first satisfied by the breast, and therefore the infant develops its first attachment (psychological need) to the breast. Only gradually does the child generalize that desire to the woman who owns the breast. The behaviorists didn't care about libido, but they, too, saw the breast as the first reinforcer, the first reward (milk) for the first behavior (sucking). The heart of behaviorism, if it had one, was conditioning—the idea that learning occurs when rewards are *conditional* upon behaviors. Unconditional love—holding, nuzzling, and cuddling children for no reason—was seen as the surest way to make children lazy, spoiled, and weak. Freudians and behaviorists were united in their belief that highly affectionate mothering damages children, and that scientific principles could improve child rearing. Three years before my father entered the hospital, John Watson, the leading American behaviorist (in the years before B. F. Skinner), published the best-seller *Psychological Care of Infant and Child*.⁴ Watson wrote of his dream that one day babies would be raised in baby farms, away from the corrupting influences of parents. But until that day arrived, parents were

urged to use behaviorist techniques to rear strong children: Don't pick them up when they cry, don't cuddle or coddle them, just dole out benefits and punishments for each good and bad action.

How could science have gotten it so wrong? How could doctors and psychologists not have seen that children need love as well as milk? This chapter is about that need—the need for other people, for touch, and for close relationships. No man, woman, or child is an island. Scientists have come a long way since John Watson, and there is now a much more humane science of love. The story of this science begins with orphans and rhesus monkeys and ends with a challenge to the dismal view of love held by many of the ancients, East and West. The heroes of this story are two psychologists who rejected the central tenets of their training: Harry Harlow and John Bowlby. These two men knew that something was missing in behaviorism and in psychoanalysis, respectively. Against great odds they changed their fields, they humanized the treatment of children, and they made it possible for science to greatly improve upon the wisdom of the ancients.

TO HAVE AND TO HOLD

Harry Harlow⁵ earned his Ph.D. in 1930 at Stanford, where he wrote his dissertation on the feeding behavior of baby rats. He took a job at the University of Wisconsin, where he found himself overwhelmed with teaching and undersupplied with research subjects—he had no lab space, no rats, no way to perform the experiments he was expected to publish. Out of desperation, Harlow took his students to the little zoo in Madison, Wisconsin, which had a small number of primates. Harlow and his first graduate student, Abe Maslow, couldn't run controlled experiments using so few animals. They were forced instead to observe, to keep their minds open, and to learn from species closely related to human beings. And one of the first things they saw was curiosity. The apes and monkeys liked to solve puzzles (the humans gave them tests to measure physical dexterity and intelligence), and would work at tasks for what seemed to be the sheer pleasure of it. Behaviorism, in contrast, said that animals will only do what they have been reinforced for doing.

Harlow sensed he had found a flaw in behaviorism, but he couldn't prove it with anecdotes from the local zoo. He desperately wanted a lab in which to study primates, not rats, so he built one himself—literally built it, in the shell of an abandoned building, with the help of his students. In that makeshift lab, for the next thirty years, Harlow and his students infuriated behaviorists by demonstrating with ever more precision that monkeys are curious, intelligent creatures who like to figure things out. They follow the laws of reinforcement to some degree, as do humans, but there is much more going on in a monkey brain than the brain of a behaviorist could grasp. For example, giving monkeys raisins as a reward for each correct step in solving a puzzle (such as opening a mechanical latch with several moving parts) actually interferes with the solving, because it distracts the monkeys.⁶ They enjoy the task for its own sake.

As Harlow's lab grew, he faced perennial shortages of monkeys. They were hard to import and, when they arrived they were often sick, bringing a stream of new infections into the lab. In 1955, Harlow conceived the bold idea of starting his own breeding colony of rhesus monkeys. Nobody had ever created a self-sustaining breeding colony of monkeys in the United States, let alone in the cold climate of Wisconsin, but Harlow was undeterred. He allowed his rhesus monkeys to mate, and then he took away the children within hours of their birth—to save them from infections in the crowded lab. After much experimentation, he and his students created an artificial baby formula full of nutrients and antibiotics. They found the optimum pattern of feeding, light and dark cycles, and temperature. Each baby was raised in its own cage, safe from disease. Harlow had in a way realized Watson's dream of a baby farm, and the crop grew large and healthy-looking. But when the farm-raised monkeys were brought into the company of others, they were stunned and unnerved. They never developed normal social or problem-solving skills, so they were useless for experiments. Harlow and his students were stumped. What had they forgotten?

The clue was in plain sight, clutched in the monkeys' hands, until finally a grad student, Bill Mason, noticed it: diapers. The cages in the baby hatchery were sometimes lined with old diapers to provide bedding material and protect the babies from the cold floor. The monkeys clung to the diapers, especially when they were afraid, and took them along when they

were carried to new cages. Mason proposed a test to Harlow: Let's expose some young monkeys to a bundle of cloth and a bundle of wood. Let's see whether the monkeys just need to hold on to something, anything, or whether there's something special about the softness of the cloth. Harlow loved the idea, and, as he thought it over, he saw an even grander question: Were the diapers really substitutes for mothers? Did the monkeys have an innate need to hold and be held, a need that was utterly starved in the baby farm? If so, how could he prove it? Harlow's proof became one of the most famous experiments in all of psychology.

Harlow put the milk hypothesis to a direct test. He created two kinds of surrogate mother, each one a cylinder about the size of an adult female rhesus monkey, complete with a wooden head that had eyes and a mouth. One kind was made of wire mesh, the other was covered with a layer of foam and then a layer of soft terrycloth. Each of eight baby rhesus monkeys was raised alone in a cage with two surrogate mothers, one of each kind. For four of the monkeys, milk was delivered only from a tube coming through the chest of the wire mother. For the other four, the tube came through the chest of the cloth mother. If Freud and Watson were right that milk was the cause of attachment, the monkeys should attach to their milk givers. But that's not what happened. All the monkeys spent nearly all their time clinging to, climbing on, and pushing themselves into the soft folds of the cloth mother. Harlow's experiment⁷ is so elegant and so convincing that you don't need to see statistics to understand the results. You just need to see the famous photo, now included in every introductory psychology book, in which a baby monkey clings to the cloth mother with its hind legs while stretching over to feed from the tube protruding from the wire mother.

Harlow argued that "contact comfort" is a basic need that young mammals have for physical contact with their mother. In the absence of a real mother, young mammals will seek out whatever feels most like a mother. Harlow chose the term carefully, because the mother, even a cloth mother, provides comfort when it is most needed, and that comfort comes mostly from direct contact.

Displays of familial love often move people to tears, and Deborah Blum's wonderful biography of Harlow, *Love at Goon Park*,⁸ is full of touching expressions of familial love. It is an uplifting story, ultimately, but along the

way it is full of sadness and unrequited love. The cover of the book, for example, shows a picture of a young rhesus monkey alone in a cage, gazing at its cloth “mother” through a pane of glass.

LOVE CONQUERS FEAR

John Bowlby’s life followed an entirely different path from Harlow’s, even though it led, ultimately, to the same discovery.⁹ Bowlby was an English aristocrat, raised by a nanny, and sent to boarding school. He studied medicine and became a psychoanalyst, but during his early training years, he did some volunteer work that shaped the rest of his career. He worked at two homes for maladjusted children, many of whom had no real contact with their parents. Some were aloof and uncommunicative; others were hopelessly clingy, following him around anxiously if he paid the slightest attention to them. After serving in World War II, Bowlby returned to England to run the children’s clinic in a hospital. He began to do research on how separation from parents affects children. Europe at that time had just experienced more parent-child separations than had any place in all of human history. The war had created vast numbers of orphans, refugees, and children sent away to the countryside for their own safety. The new World Health Organization commissioned Bowlby to write a report on the best way to deal with these children. Bowlby toured hospitals and orphanages, and his report, published in 1951, was a passionate argument against prevailing notions that separation and isolation are harmless, and that biological needs such as nutrition are paramount. Children need love to develop properly, he argued; children need mothers.

Throughout the 1950s, Bowlby developed his ideas and weathered the scorn of psychoanalysts such as Anna Freud and Melanie Klein, whose theories (about libido and breasts) he contradicted. He had the good luck to meet a leading ethologist of the day, Robert Hinde, who taught him about new research on animal behavior. Konrad Lorenz, for example, had demonstrated that ducklings, ten to twelve hours after they hatch, will lock onto whatever duck-sized thing moves around in their environment and then follow it around for months.¹⁰ In nature this thing is always mom, but

in Lorenz's demonstrations, anything he moved around worked—even his own boots (with him in them). This visual “imprinting” mechanism is quite different from what happens in people, but once Bowlby began to think about how evolution creates mechanisms to make sure that mothers and children stay together, the way was open for an entirely new approach to human parent-child relationships. There's no need to derive the bond from milk, reinforcement, libido, or anything else. Rather, the attachment of mother and child is so enormously important for the survival of the child that a dedicated system is built into mother and child in all species that rely on maternal care. As Bowlby began to pay more attention to animal behavior, he saw many similarities between the behaviors of baby monkeys and baby humans: clinging, sucking, crying when left behind, following whenever possible. All these behaviors functioned in other primates to keep the child close to mom, and all were visible in human children, even the “pick me up” signal of upstretched arms.

In 1957, Hinde learned about Harlow's not-yet-published cloth-mother studies and told Bowlby, who wrote to Harlow and later visited him in Wisconsin. The two men became great allies and supporters of each other. Bowlby, the great theorist, created the framework that has unified most subsequent research on parent-child relations; and Harlow, the great experimentalist, provided the first irrefutable lab demonstrations of the theory.

Bowlby's grand synthesis is called attachment theory.¹¹ It borrows from the science of cybernetics—the study of how mechanical and biological systems can regulate themselves to achieve preset goals while the environment around and inside them changes. Bowlby's first metaphor was the simplest cybernetic system of all—a thermostat that turns on a heater when the temperature drops below a set point.

Attachment theory begins with the idea that two basic goals guide children's behavior: safety and exploration. A child who stays safe survives; a child who explores and plays develops the skills and intelligence needed for adult life. (This is why all mammal babies play; and the larger their frontal cortex, the more they need to play).¹² These two needs are often opposed, however, so they are regulated by a kind of thermostat that monitors the level of ambient safety. When the safety level is adequate, the child plays and explores. But as soon as it drops too low, it's as though a switch were thrown

and suddenly safety needs become paramount. The child stops playing and moves toward mom. If mom is unreachable, the child cries, and with increasing desperation; when mom returns, the child seeks touch, or some other reassurance, before the system can reset and play can resume. This is an instance of the “design” principle I discussed in chapter 2: opposing systems push against each other to reach a balance point. (Fathers make perfectly good attachment figures, but Bowlby focused on mother-child attachments, which usually get off to a faster start.)

If you want to see the system in action, just try engaging a two-year-old in play. If you go to a friend’s house and meet her child for the first time, it should take only a minute. The child feels secure in his familiar surroundings, and his mother functions as what Bowlby called a “secure base”—an attachment figure whose presence guarantees safety, turns off fear, and thereby enables the explorations that lead to healthy development. But if your friend brings her son over to *your* house for the first time, it will take longer. You’ll probably have to walk around your friend just to find the little head hiding behind her thighs. And then, if you succeed in starting a game—making faces at him to make him laugh, perhaps—just watch what happens when his mother goes to the kitchen to get a glass of water. The thermostat clicks, the game ends, and your play partner scampers off to the kitchen, too. Harlow had shown all the same behavior in monkeys.¹³ Young monkeys placed with their cloth mother in the center of an open room full of toys eventually climbed down from mom to explore, but they returned often to touch her and reconnect. If the cloth mother was removed from the room, all play stopped and frantic screaming ensued.

When children are separated from their attachment figures for a long time, as in a hospital stay, they quickly descend into passivity and despair. When they are denied a stable and enduring attachment relationship (raised, for example, by a succession of foster parents or nurses), they are likely to be damaged for life, Bowlby said. They might become the aloof loners or hopeless clingers that Bowlby had seen in his volunteer work. Bowlby’s theory directly contradicted Watson as well as the Freuds (Sigmund and Anna): If you want your children to grow up to be healthy and independent, you should hold them, hug them, cuddle them, and love them. Give them a secure base and they will explore and then conquer the world on their own. The power of

love over fear was well expressed in the New Testament: "There is no fear in love, but perfect love casts out fear" (I JOHN 4:18).

THE PROOF IS IN THE PARTING

If you're going to contradict the prevailing wisdom of your day, you'd better have darn good evidence. Harlow's studies were darn good, but skeptics claimed they didn't apply to people. Bowlby needed more proof, and he got it from a Canadian woman who happened to answer an ad he placed for a research assistant in 1950. Mary Ainsworth, who had moved to London with her husband, spent three years working with Bowlby on his early studies of hospitalized children. When her husband took an academic job in Uganda, Ainsworth went with him again and took advantage of the opportunity to make careful observations of children in Ugandan villages. Even in a culture where women share mothering duties for all the children in the extended family household, Ainsworth observed a special bond between a child and his own mother. The mother was much more effective as a secure base than were other women. Ainsworth then moved to the Johns Hopkins University in Baltimore, and after that to the University of Virginia, where she thought about how to test Bowlby's ideas, and her own, about the mother-child relationship.

In Bowlby's cybernetic theory, the action is in the changes. You can't just watch a child play; you have to look at how the exploration and safety goals shift in response to changing conditions. So Ainsworth developed a little drama, later called the "Strange Situation," and cast the child in the starring role.¹⁴ In essence, she re-created the experiments in which Harlow had placed monkeys in an open room with novel toys. In the first scene, the mother and her child enter a comfortable room, full of toys. Most children in the experiment soon crawl or toddle off to explore. In scene two, a friendly woman enters, talks with the mother for a few minutes, and then joins the child in play. In scene three, the mother gets up and leaves the child alone for a few minutes with the stranger. In scene four, she returns and the stranger leaves. In scene five, the mother leaves again, and the child is all alone in the room. In scene six, the stranger returns; and in

scene seven, the mother returns for good. The play is designed to ratchet up the child's stress level in order to see how the child's attachment system manages the scene changes. Ainsworth found three common patterns of managing.

In about two-thirds of American children, the system does just what Bowlby said it should, that is, shift smoothly between play and security-seeking as the situation changes. Children following this pattern, called "secure" attachment, reduce or stop their play when their mothers leave, and then show anxiety, which the stranger cannot fully relieve. In the two scenes where mom returns, these children show delight, often moving toward her or touching her to reestablish contact with their secure base; but then they quickly settle down and return to play. In the other third of children, the scene changes are more awkward; these children have one of two types of insecure attachment. The majority of them don't seem to care very much whether mom comes or goes, although subsequent physiological research showed that they are indeed distressed by the separation. Rather, these children seem to be suppressing their distress by trying to manage it on their own instead of relying upon mom for comfort. Ainsworth called this pattern "avoidant" attachment. The remaining children, about 12 percent in the United States, are anxious and clingy throughout the study. They become extremely upset when separated from mom, they sometimes resist her efforts to comfort them when she returns, and they never fully settle down to play in the unfamiliar room. Ainsworth called this pattern "resistant."¹⁵

Ainsworth first thought these differences were caused entirely by good or bad mothering. She observed mothers at home and found that those who were warm and highly responsive to their children were most likely to have children who showed secure attachment in the strange situation. These children had learned that they could count on their mothers, and were therefore the most bold and confident. Mothers who were aloof and unresponsive were more likely to have avoidant children, who had learned not to expect much help and comfort from mom. Mothers whose responses were erratic and unpredictable were more likely to have resistant children, who had learned that their efforts to elicit comfort sometimes paid off, but sometimes not.

But whenever I hear about correlations between mother and child, I'm skeptical. Twin studies almost always show that personality traits are due

more to genetics than to parenting.¹⁶ Maybe it's just that happy women, those who won the cortical lottery, are warm and loving, and they pass on their happy genes to their children, who then show up as securely attached. Or maybe the correlation runs in reverse: Children do have stable inborn temperaments¹⁷—sunny, cranky, or anxious—and the sunny ones are just so much fun that their mothers *want* to be more responsive. My skepticism is bolstered by the fact that studies done after Ainsworth's home study have generally found only small correlations between mothers' responsiveness and the attachment style of their children.¹⁸ On the other hand, twin studies have found that genes play only a small role in determining attachment style.¹⁹ So now we have a real puzzle, a trait that correlates weakly with mothering and weakly with genes. Where does it come from?

Bowlby's cybernetic theory forces us to think outside the usual nature-nurture dichotomy. You have to see attachment style as a property that emerges gradually during thousands of interactions. A child with a particular (genetically influenced) temperament makes bids for protection. A mother with a particular (genetically influenced) temperament responds, or doesn't respond, based on her mood, on how overworked she is, or on what childcare guru she has been reading. No one event is particularly important, but over time the child builds up what Bowlby called an "internal working model" of himself, his mother, and their relationship. If the model says that mom is always there for you, you'll be bolder in your play and explorations. Round after round, predictable and reciprocal interactions build trust and strengthen the relationship. Children with sunny dispositions who have happy mothers are almost certain to play the game well and develop a secure attachment style, but a dedicated mother can overcome either her own or her child's less pleasant disposition and foster a secure internal working model of their relationship. (Everything I have reported above is true for fathers too, but most children in all cultures spend more time with their mothers.)

IT'S NOT JUST FOR CHILDREN

When I started writing this chapter, I planned to review attachment theory in a page or two and then move on to the stuff that we adults really care

about. When we hear the word “love,” we think of romantic love. We might hear an occasional song about love between parents and children on a country music radio station, but anywhere else on the dial love means the kind of love you fall into and then struggle to hold onto. The more I delved into the research, however, the more I realized that Harlow, Bowlby, and Ainsworth can help us understand grown-up love. See for yourself. Which of the following statements best describes you in romantic relationships?

1. I find it relatively easy to get close to others and am comfortable depending on them and having them depend on me. I don't often worry about being abandoned or about someone getting too close to me.
2. I am somewhat uncomfortable being close to others; I find it difficult to trust them completely, difficult to allow myself to depend on them. I am nervous when anyone gets too close, and often love partners want me to be more intimate than I feel comfortable being.
3. I find that others are reluctant to get as close as I would like. I often worry that my partner doesn't really love me or won't want to stay with me. I want to merge completely with another person, and this desire sometimes scares people away.²⁰

The attachment researchers Cindy Hazan and Phil Shaver developed this simple test to see whether Ainsworth's three styles were still at work when adults try to form relationships. They are. Some people change style as they grow up, but the great majority of adults choose the descriptor that matched the way they were as a child.²¹ (The three choices above correspond to Ainsworth's secure, avoidant, and resistant patterns.) Internal working models are fairly stable (though not unchangeable), guiding people in their most important relationships throughout their lives. And just as secure babies are happier and more well-adjusted, secure adults enjoy happier, longer relationships as well as lower rates of divorce.²²

But does adult romantic love really grow out of the same psychological system that attaches children to their mothers? To find out, Hazan traced the process by which childhood attachment changes with age. Bowlby had been specific about the four defining features of attachment relationships:²³

1. proximity maintenance (the child wants and strives to be near the parent)
2. separation distress (self-explanatory)
3. safe haven (the child, when frightened or distressed, comes to the parent for comfort)
4. secure base (the child uses the parent as a base from which to launch exploration and personal growth)

Hazan and her colleagues²⁴ surveyed hundreds of people from the ages of six through eighty-two, asking which people in their lives fulfilled each of the four defining features of attachment (for example: “Whom do you most like to spend time with?” “Whom do you turn to when you are feeling upset?”). If babies could take the survey, they would nominate mom or dad as the answer to all questions, but by the time they are eight, children want most strongly to spend time with their peers. (When children resist leaving their friends to come home for dinner, that’s proximity maintenance.) Between the ages of eight and fourteen, safe haven expands from parents to include peers as adolescents begin turning to each other for emotional support. But it’s only at the end of adolescence, around the ages fifteen to seventeen, that all four components of attachment can be satisfied by a peer, specifically a romantic partner. The New Testament records this normal transference of attachment: “For this reason a man shall leave his father and mother and be joined to his wife, and the two shall become one flesh. So they are no longer two, but one flesh” (MARK 10:7–9).

Evidence that romantic partners become true attachment figures, like parents, comes from a review²⁵ of research on how people cope with the death of a spouse, or a long separation. The review found that adults experience the same sequence Bowlby had observed in children placed in hospitals: initial anxiety and panic, followed by lethargy and depression, followed by recovery through emotional detachment. Furthermore, the review found that contact with close friends was of little help in blunting the pain, but renewed contact with one’s *parents* was much more effective.

Once you think about it, the similarities between romantic relationships and parent-infant relationships are obvious. Lovers in the first rush of love spend endless hours in face-to-face mutual gaze, holding each other, nuzzling

and cuddling, kissing, using baby voices, and enjoying the same release of the hormone oxytocin that binds mothers and babies to each other in a kind of addiction. Oxytocin prepares female mammals to give birth (triggering uterine contractions and milk release), but it also affects their brains, fostering nurturant behaviors and reducing feelings of stress when mothers are in contact with their children.²⁶

This powerful attachment of mothers to infants—often called the “caregiving system”—is a different psychological system from the attachment system in infants, but the two systems obviously evolved in tandem. The infant’s distress signals are effective only because they trigger caregiving desires in the mother. Oxytocin is the glue that makes the two parts stick together. Oxytocin has been oversimplified in the popular press as a hormone that makes people (even ornery men) suddenly sweet and affectionate, but more recent work suggests that it can also be thought of as a stress hormone in women:²⁷ It is secreted when women are under stress and their attachment needs are *not* being met, causing a need for contact with a loved one. On the other hand, when oxytocin floods the brain (male or female) while two people *are* in skin-to-skin contact, the effect is soothing and calming, and it strengthens the bond between them. For adults, the biggest rush of oxytocin—other than giving birth and nursing—comes from sex.²⁸ Sexual activity, especially if it includes cuddling, extended touching, and orgasm, turns on many of the same circuits that are used to bond infants and parents. It’s no wonder that childhood attachment styles persist in adulthood: The whole attachment system persists.

LOVE AND THE SWELLED HEAD

Adult love relationships are therefore built out of two ancient and interlocking systems: an attachment system that bonds child to mother and a caregiving system that bonds mother to child. These systems are as old as mammals—older perhaps, because birds have them, too. But we still have to add something else to explain why sex is related to love. No problem; nature was motivating animals to seek each other out for sex long before mammals or birds existed. The “mating system” is completely separate from the other

two systems, and it involves distinctive brain areas and hormones.²⁹ In some animals, such as rats, the mating system draws male and female together just long enough for them to copulate. In other species, such as elephants, male and female are drawn together for several days—the duration of the fertile period—during which they share tender caresses, play joyfully, and show many other signs that remind human observers of mutual infatuation.³⁰ Whatever the duration, for most mammals (other than humans) the three systems are strung together with perfect predictability. First, hormonal changes in the female around the time of ovulation trigger advertisements of her fertility: Female dogs and cats, for example, release pheromones; female chimpanzees and bonobos exhibit enormous red genital swellings. Next, the males become turned on and compete (in some species) to see who gets to mate. The female makes some sort of choice (in most species), which in turn activates her own mating system; and then, some months later, birth activates the caregiving system in the mother and the attachment system in the child. Dad is left out in the cold, where he spends his time sniffing for more pheromones, or scanning for more swellings. Sex is for reproduction; lasting love is for mothers and children. So why are people so different? How did human females come to hide all signs of ovulation and get men to fall in love with them and their children?

Nobody knows, but the most plausible theory³¹ in my opinion begins with the enormous expansion of the human brain that I talked about in chapters 1 and 3. When the first hominids split off from the ancestors of modern chimpanzees, their brains were no bigger than those of chimpanzees. These human ancestors were basically just bipedal apes. But then, around 3 million years ago, something changed. Something in the environment, or perhaps an increase in tool use made possible by increasingly dextrous hands, made it highly adaptive to have a much larger brain and much higher intelligence. However, brain growth faced a literal bottleneck: the birth canal. There were physical limits to how large a head hominid females could give birth to and still have a pelvis that would allow them to walk upright. At least one species of hominid—our ancestor—evolved a novel technique that got around this limitation by sending babies out of the uterus long before their brains were developed enough to control their bodies. In all other primate species, brain growth slows dramatically soon after birth

because the brain is mostly complete and ready for service; only some fine tuning during a few years of childhood play and learning is needed. In humans, however, the rapid rate of embryonic brain growth continues for about two years after birth, followed by a slower but continuous increase in brain weight for another twenty years.³² Humans are the only creatures on Earth whose young are utterly helpless for years, and heavily dependent on adult care for more than a decade.

Given the enormous burden that is the human child, women can't do it on their own. Studies of hunter-gatherer societies show that mothers of young children cannot collect enough calories to keep themselves and their children alive.³³ They rely on the large quantity of food as well as the protection provided by males in their peak years of productivity. Big brains, so useful for gossip and social manipulation (as well as hunting and gathering), could therefore have evolved only if men began chipping in. But in the competitive game of evolution, it's a losing move for a male to provide resources to a child who is not his own. So active fathers, male-female pair-bonds, male sexual jealousy, and big-headed babies all co-evolved—that is, arose gradually but together. A man who felt some desire to stay with a woman, guard her fidelity, and contribute to the rearing of their children could produce smarter children than could his less paternal competitors. In environments in which intelligence was highly adaptive (which may have been all human environments, once we began making tools), male investment in children may have paid off for the men themselves (for their genes, that is), and therefore became more common with each successive generation.

But from what raw material could a tie evolve between men and women where one did not exist before? Evolution cannot design anything from scratch. Evolution is a process in which bones and hormones and behavioral patterns that were already coded for by the genes are changed slightly (by random mutation of those genes) and then selected if they confer an advantage on an individual. It didn't take much change to modify the attachment system, which every man and every woman had used as a child to attach to mom, and have it link up with the mating system, which was already turning on in each young person at the time of puberty.

Granted, this theory is speculative (the fossilized bones of a committed father look no different from those of an indifferent one), but it does tie together neatly many of the distinctive features of human life, such as our painful childbirth, long infancy, large brains, and high intelligence. The theory connects these biological quirks about human beings to some of the most important emotional oddities of our species: the existence of strong and (often) enduring emotional bonds between men and women, and between men and children. Because men and women in a relationship have many conflicting interests, evolutionary theory does not view love relationships as harmonious partnerships for childrearing,³⁴ but a universal feature of human cultures is that men and women form relationships intended to last for years (marriage) that constrain their sexual behavior in some way and institutionalize their ties to children and to each other.

TWO LOVES, TWO ERRORS

Take one ancient attachment system, mix with an equal measure of caregiving system, throw in a modified mating system and voila, that's romantic love. I seem to have lost something here; romantic love is so much more than the sum of its parts. It is an extraordinary psychological state that launched the Trojan war, inspired much of the world's best (and worst) music and literature, and gave many of us the most perfect days of our lives. But I think that romantic love is widely misunderstood, and looking at its psychological subcomponents can clear up some puzzles and guide the way around love's pitfalls.

In some corners of universities, the professors tell their students that romantic love is a social construction, invented by the French troubadours of the twelfth century with their stories of chivalry, idealization of women, and the uplifting ache of unconsummated desire. It's certainly true that cultures create their own understandings of psychological phenomena, but many of those phenomena will occur regardless of what people think about them. (For example, death is socially constructed by every culture, but bodies die without consulting those constructions.) A survey of ethnographies

from 166 human cultures³⁵ found clear evidence of romantic love in 88 percent of them; for the rest, the ethnographic record was too thin to be sure either way.

What the troubadours did give us is a particular myth of “true” love—the idea that real love burns brightly and passionately, and then it just keeps on burning until death, and then it just keeps on burning after death as the lovers are reunited in heaven. This myth seems to have grown and diffused in modern times into a set of interrelated ideas about love and marriage. As I see it, the modern myth of true love involves these beliefs: True love is passionate love that never fades; if you are in true love, you should marry that person; if love ends, you should leave that person because it was not true love; and if you can find the right person, you will have true love forever. You might not believe this myth yourself, particularly if you are older than thirty; but many young people in Western nations are raised on it, and it acts as an ideal that they unconsciously carry with them even if they scoff at it. (It’s not just Hollywood that perpetrates the myth; Bollywood, the Indian film industry, is even more romanticized.)

But if true love is defined as eternal passion, it is biologically impossible. To see this, and to save the dignity of love, you have to understand the difference between two kinds of love: passionate and companionate. According to the love researchers Ellen Berscheid and Elaine Walster, passionate love is a “wildly emotional state in which tender and sexual feelings, elation and pain, anxiety and relief, altruism and jealousy coexist in a confusion of feelings.”³⁶ Passionate love is the love you fall into. It is what happens when Cupid’s golden arrow hits your heart, and, in an instant, the world around you is transformed. You crave union with your beloved. You want, somehow, to crawl into each other. This is the urge that Plato captured in *The Symposium*, in which Aristophanes’ toast to love is a myth about its origins. Aristophanes says that people originally had four legs, four arms, and two faces, but one day the gods felt threatened by the power and arrogance of human beings and decided to cut them in half. Ever since that day, people have wandered the world searching for their other halves. (Some people originally had two male faces, some two female, and the rest a male and a female, thereby explaining the diversity of sexual orientation.) As proof, Aristophanes asks us to imagine that Hephaestus (the god of fire

and hence of blacksmiths) were to come upon two lovers as they lay together in an embrace, and say to them:

What is it you human beings really want from each other? . . . Is this your heart's desire, then—for the two of you to become parts of the same whole, as near as can be, and never to separate, day or night? Because if that's your desire, I'd like to weld you together and join you into something that is naturally whole, so that the two of you are made into one. Then the two of you would share one life, as long as you lived, because you would be one being, and by the same token, when you died, you would be one and not two in Hades, having died a single death. Look at your love, and see if this is what you desire.³⁷

Aristophanes says that no lovers would turn down such an offer.

Berscheid and Walster define companionate love, in contrast, as “the affection we feel for those with whom our lives are deeply intertwined.”³⁸ Companionate love grows slowly over the years as lovers apply their attachment and caregiving systems to each other, and as they begin to rely upon, care for, and trust each other. If the metaphor for passionate love is fire, the metaphor for companionate love is vines growing, intertwining, and gradually binding two people together. The contrast of wild and calm forms of love has occurred to people in many cultures. As a woman in a hunter-gatherer tribe in Namibia put it: “When two people come together their hearts are on fire and their passion is very great. After a while, the fire cools and that's how it stays.”³⁹

Passionate love is a drug. Its symptoms overlap with those of heroin (euphoric well-being, sometimes described in sexual terms) and cocaine (euphoria combined with giddiness and energy).⁴⁰ It's no wonder: Passionate love alters the activity of several parts of the brain, including parts that are involved in the release of dopamine.⁴¹ Any experience that feels intensely good releases dopamine, and the dopamine link is crucial here because drugs that artificially raise dopamine levels, as do heroin and cocaine, put you at risk of addiction. If you take cocaine once a month, you won't become addicted, but if you take it every day, you will. No drug can keep you continuously high. The brain reacts to a chronic surplus of dopamine, develops neurochemical

reactions that oppose it, and restores its own equilibrium. At that point, tolerance has set in, and when the drug is withdrawn, the brain is unbalanced in the opposite direction: pain, lethargy, and despair follow withdrawal from cocaine or from passionate love.

So if passionate love is a drug—literally a drug—it has to wear off eventually. Nobody can stay high forever (although if you find passionate love in a long-distance relationship, it's like taking cocaine once a month; the drug can retain its potency because of your suffering between doses). If passionate love is allowed to run its joyous course, there must come a day when it weakens. One of the lovers usually feels the change first. It's like waking up from a shared dream to see your sleeping partner drooling. In those moments of returning sanity, the lover may see flaws and defects to which she was blind before. The beloved falls off the pedestal, and then, because our minds are so sensitive to changes, her change in feeling can take on exaggerated importance. "Oh, my God," she thinks, "the magic has worn off—I'm not in love with him anymore." If she subscribes to the myth of true love, she might even consider breaking up with him. After all, if the magic ended, it can't be true love. But if she does end the relationship, she might be making a mistake.

Passionate love does not turn into companionate love. Passionate love and companionate love are two separate processes, and they have different time courses. Their diverging paths produce two danger points, two places where many people make grave mistakes. In figure 6.1, I've drawn out how the intensity of passionate and companionate love might vary in one person's relationship over the course of six months. Passionate love ignites, it burns, and it can reach its maximum temperature within days. During its weeks or months of madness, lovers can't help but think about marriage, and often they talk about it, too. Sometimes they even accept Hephaestus's offer and commit to marriage. This is often a mistake. Nobody can think straight when high on passionate love. The rider is as besotted as the elephant. People are not allowed to sign contracts when they are drunk, and I sometimes wish we could prevent people from proposing marriage when they are high on passionate love because once a marriage proposal is accepted, families are notified, and a date is set, it's very hard to stop the train. The drug is likely to wear off at some point during the stressful wed-

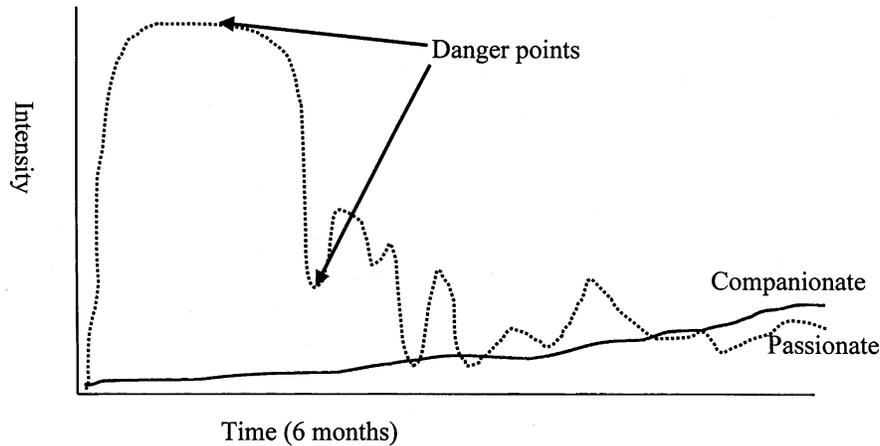


Fig. 6.1 The Time Course of the Two Kinds of Love (Short Run)

ding planning phase, and many of these couples will walk down the aisle with doubt in their hearts and divorce in their future.

The other danger point is the day the drug weakens its grip. Passionate love doesn't end on that day, but the crazy and obsessional high period does. The rider regains his senses and can, for the first time, assess where the elephant has taken them. Breakups often happen at this point, and for many couples that's a good thing. Cupid is usually portrayed as an impish fellow because he's so fond of joining together the most inappropriate couples. But sometimes breaking up is premature, because if the lovers had stuck it out, if they had given companionate love a chance to grow, they might have found true love.

True love exists, I believe, but it is not—cannot be—passion that lasts forever. True love, the love that undergirds strong marriages, is simply strong companionate love, with some added passion, between two people who are firmly committed to each other.⁴² Companionate love looks weak in the graph above because it can never attain the intensity of passionate love. But if we change the time scale from six months to sixty years, as in the next figure, it is passionate love that seems trivial—a flash in the pan—while companionate love can last a lifetime. When we admire a couple still in love on their fiftieth anniversary, it is this blend of loves—mostly companionate—that we are admiring.

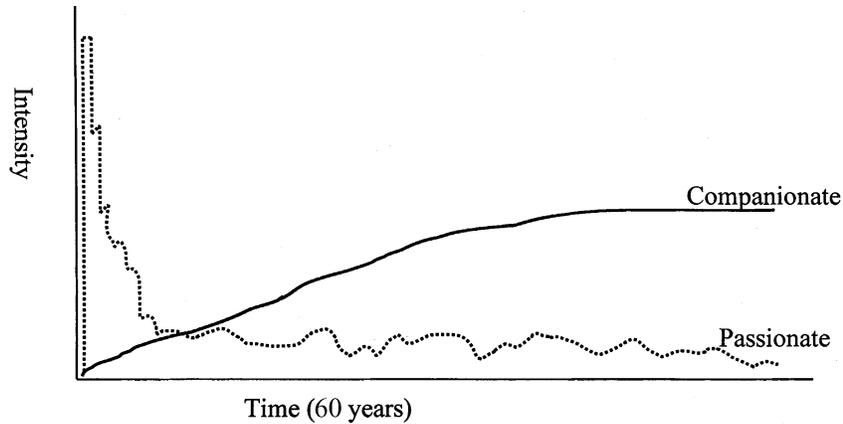


Fig. 6.2 The Time Course of the Two Kinds of Love (Long Run)

WHY DO PHILOSOPHERS HATE LOVE?

If you are in passionate love and want to celebrate your passion, read poetry. If your ardor has calmed and you want to understand your evolving relationship, read psychology. But if you have just ended a relationship and would like to believe you are better off without love, read philosophy. Oh, there is plenty of work extolling the virtues of love, but when you look closely, you find a deep ambivalence. Love of God, love of neighbor, love of truth, love of beauty—all of these are urged upon us. But the passionate, erotic love of a real person? Heavens no!

In the ancient East, the problem with love is obvious: Love *is* attachment. Attachments, particularly sensual and sexual attachments, must be broken to permit spiritual progress. Buddha said, “So long as lustful desire, however small, of man for women is not controlled, so long the mind of man is not free, but is bound like a calf tied to a cow.”⁴³ *The Laws of Manu*, an ancient Hindu treatise on how young Brahmin men should live, was even more negative about women: “It is the very nature of women to corrupt men here on earth.”⁴⁴ Even Confucius, who was not focused on breaking attachments, saw romantic love and sexuality as threats to the higher virtues of filial piety and loyalty to one’s superiors: “I have never seen anyone who loved virtue as much as sex.”⁴⁵ (Of course, Buddhism and Hinduism are diverse, and both have changed with time and place. Some modern leaders, such as the Dalai Lama, accept roman-

tic love and its attendant sexuality as an important part of life. But the spirit of the ancient religious and philosophical texts is much more negative.)⁴⁶

In the West, the story is a bit different: Love is widely celebrated by the poets from Homer onwards. Love launches the drama of the *Iliad*, and the *Odyssey* ends with the lusty return of Odysseus to Penelope. When the Greek and Roman philosophers get hold of romantic love, however, they usually either despise it or try to turn it into something else. Plato's *Symposium*, for example, is an entire dialogue devoted to the praise of love. But you never know what position Plato holds until Socrates speaks, and when Socrates speaks, he trashes the eulogies to love that Aristophanes and others have just given. He describes how love produces a "disease" among the animals: "First they are sick for intercourse with each other, then for nurturing their young."⁴⁷ (Note: Mating system leads to caregiving system.) For Plato, when human love resembles animal love, it is degrading. The love of a man for a woman, as it aims at procreation, is therefore a debased kind of love. Plato's Socrates then shows how love can transcend its animal origins by aiming at something higher. When an older man loves a young man, their love can be elevating for both because the older man can, in between rounds of intercourse, teach the young man about virtue and philosophy. But even this love must be a stepping stone only: When a man loves a beautiful body he must learn to love beauty in general, not the beauty of one particular body. He must come to find beauty in men's souls, and then in ideas and philosophy. Ultimately he comes to know the form of beauty itself:

The result is that he will see the beauty of knowledge and be looking mainly not at beauty in a single example—as a servant would who favored the beauty of a little boy or a man or a single custom . . . but the lover is turned to the great sea of beauty, and, gazing upon this, he gives birth to many gloriously beautiful ideas and theories, in unstinting love of wisdom. . . .⁴⁸

The essential nature of love as an attachment between two people is rejected; love can be dignified only when it is converted into an appreciation of beauty in general.

The later Stoics also object to the particularity of love, to the way it places the source of one's happiness in the hands of another person, whom

one cannot fully control. Even the Epicureans, whose philosophy was based on the pursuit of pleasure, value friendship but oppose romantic love. In *De Rerum Natura*, the philosophical poet Lucretius lays out the fullest surviving statement of the philosophy of Epicurus. The end of Book 4 is widely known as the “Tirade Against Love,” in which Lucretius compares love to a wound, a cancer, and a sickness. The Epicureans were experts on desire and its satisfaction; they objected to passionate love because it cannot be satisfied:

*When two lie tasting, limb by limb
life's bloom, when flesh gives foretaste of delight,
and Venus is ready to sow the female field,
they hungrily seize each other, mouth to mouth
the spittle flows, they pant, press tooth to lip—
vainly, for they can chafe no substance off
nor pierce and be gone, one body in the other.
For often this seems to be their wish, their goal,
so greedily do they cling in passion's bond.⁴⁹*

Christianity brought forward many of these classical fears of love. Jesus commands his followers to love God, using the same words as Moses (“With all your heart, and with all your soul, and with all your might,” MATTHEW, 22:37, in referring to DEUTERONOMY 6:5). Jesus’ second commandment is to love one another: “You shall love your neighbor as yourself” (MATTHEW 22:39). But what can it mean to love others as one loves oneself? The psychological origins of love are in attachment to parents and sexual partners. We do not attach to ourselves; we do not seek security and fulfillment in ourselves. What Jesus seems to mean is that we should *value* others as much as we value ourselves; we should be kind and generous even to strangers and even to our enemies. This uplifting message is relevant to the issues of reciprocity and hypocrisy that I talked about in chapters 3 and 4, but it has little to do with the psychological systems I have been covering in this chapter. Rather, Christian love has focused on two key words: *caritas* and *agape*. *Caritas* (the origin of our word “charity”) is a kind of intense benevolence and good will; *agape* is a Greek word that refers to a kind of selfless, spiritual love

with no sexuality, no clinging to a particular other person. (Of course, Christianity endorses the love of a man and a woman within marriage, but even this love is idealized as the love of Christ for his church—EPHESIANS 5:25) As in Plato, Christian love is love stripped of its essential particularity, its focus on a *specific* other person. Love is remodeled into a general attitude toward a much larger, even infinite, class of objects.

Caritas and agape are beautiful, but they are not related to or derived from the kinds of love that people *need*. Although I would like to live in a world in which everyone radiates benevolence toward everyone else, I would rather live in a world in which there was at least one person who loved me specifically, and whom I loved in return. Suppose Harlow had raised rhesus monkeys under two conditions. For the first group, each was reared in its own cage, but each day Harlow put in a new but very nurturing adult female monkey as a companion. For the second group, each was reared in a cage with its own mother, and then each day Harlow put in a new and not particularly nice other monkey. The monkeys in the first group got something like caritas—benevolence without particularity—and they would probably emerge emotionally damaged. Without having formed an attachment relationship, they would likely be fearful of new experiences and unable to love or care for other monkeys. The monkeys in the second group would have had something closer to a normal rhesus monkey childhood, and would probably emerge healthy and able to love. Monkeys and people need close and long-lasting attachments to particular others. In chapter 9, I will propose that agape is real, but usually short-lived. It can change lives and enrich lives, but it cannot substitute for the kinds of love based on attachments.

There are several reasons why real human love might make philosophers uncomfortable. First, passionate love is notorious for making people illogical and irrational, and Western philosophers have long thought that morality is grounded in rationality. (In chapter 8, I will argue against this view.) Love is a kind of insanity, and many people have, while crazed with passion, ruined their lives and those of others. Much of the philosophical opposition to love may therefore be well-intentioned advice by the sages to the young: Shut your ears to the sirens' deceitful song.

I think, however, that at least two less benevolent motivations are at work. First, there may be a kind of hypocritical self-interest in which the

older generation says, "Do as we say, not as we did." Buddha and St. Augustine, for example, drank their fill of passionate love as young men and came out only much later as opponents of sexual attachments. Moral codes are designed to keep order within society; they urge us to rein in our desires and play our assigned roles. Romantic love is notorious for making young people give less than a damn about the rules and conventions of their society, about caste lines, or about feuds between Capulets and Montagues. So the sages' constant attempts to redefine love as something spiritual and prosocial sound to me like the moralism of parents who, having enjoyed a variety of love affairs when they were young, now try to explain to their daughter why she should save herself for marriage.

A second motivation is the fear of death. Jamie Goldenberg⁵⁰ at the University of Colorado has shown that when people are asked to reflect on their own mortality, they find the physical aspects of sexuality more disgusting, and they are less likely to agree with an essay arguing for the essential similarity of people and animals. Goldenberg and her colleagues believe that people in all cultures have a pervasive fear of death. Human beings all know that they are going to die, and so human cultures go to great lengths to construct systems of meaning that dignify life and convince people that their lives have more meaning than those of the animals that die all around them. The extensive regulation of sex in many cultures, the attempt to link love to God and then to cut away the sex, is part of an elaborate defense against the gnawing fear of mortality.⁵¹

If this is true, if the sages have a variety of unstated reasons for warning us away from passionate love and attachments of many kinds, perhaps we should be selective in heeding their advice. Perhaps we need to look at our own lives, lived in a world very different from theirs, and also at the evidence about whether attachments are good or bad for us.

FREEDOM CAN BE HAZARDOUS TO YOUR HEALTH

In the late nineteenth century, one of the founders of sociology, Emile Durkheim, performed a scholarly miracle. He gathered data from across

Europe to study the factors that affect the suicide rate. His findings can be summarized in one word: constraints. No matter how he parsed the data, people who had fewer social constraints, bonds, and obligations were more likely to kill themselves. Durkheim looked at the “degree of integration of religious society” and found that Protestants, who lived the least demanding religious lives at the time, had higher suicide rates than did Catholics; Jews, with the densest network of social and religious obligations, had the lowest. He examined the “degree of integration of domestic society”—the family—and found the same thing: People living alone were most likely to kill themselves; married people, less; married people with children, still less. Durkheim concluded that people need obligations and constraints to provide structure and meaning to their lives: “The more weakened the groups to which [a man] belongs, the less he depends on them, the more he consequently depends only on himself and recognizes no other rules of conduct than what are founded on his private interests.”⁵²

A hundred years of further studies have confirmed Durkheim’s diagnosis. If you want to predict how happy someone is, or how long she will live (and if you are not allowed to ask about her genes or personality), you should find out about her social relationships. Having strong social relationships strengthens the immune system, extends life (more than does quitting smoking), speeds recovery from surgery, and reduces the risks of depression and anxiety disorders.⁵³ It’s not just that extroverts are naturally happier and healthier; when introverts are forced to be more outgoing, they usually enjoy it and find that it boosts their mood.⁵⁴ Even people who think they don’t want a lot of social contact still benefit from it. And it’s not just that “we all need somebody to lean on”; recent work on *giving* support shows that caring for others is often more beneficial than is receiving help.⁵⁵ We need to interact and intertwine with others; we need the give *and* the take; we need to belong.⁵⁶ An ideology of extreme personal freedom can be dangerous because it encourages people to leave homes, jobs, cities, and marriages in search of personal and professional fulfillment, thereby breaking the relationships that were probably their best hope for such fulfillment.

Seneca was right: “No one can live happily who has regard to himself alone and transforms everything into a question of his own utility.” John

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Donne was right: No man, woman, or child is an island. Aristophanes was right: We need others to complete us. We are an ultrasocial species, full of emotions finely tuned for loving, befriending, helping, sharing, and otherwise intertwining our lives with others. Attachments and relationships can bring us pain: As a character in Jean-Paul Sartre's play *No Exit* said, "Hell is other people."⁵⁷ But so is heaven.