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The Moral Molecule: The Source of Love and Prosperity Book Review

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The Moral Molecule: The Source of Love and Prosperity, by Paul J. Zak.
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Neuroeconomist Paul Zak's delightful book *The Moral Molecule* answers vexing, intriguing, and important questions about human behavior and emotions. How do we, for example, account for the warm emotional glow we feel from a hug of genuine friendship? Our willingness to help strangers and repaying trust people have in us by extending trust to them in return? The fact that, in some form, the Golden Rule—do not do unto others what you would not have them do unto you—exists in virtually all cultures?

Arguably, Charles Darwin was the first to attempt to explain human feelings and behavior from a scientific perspective (Darwin, 1872). Since Darwin, a torrent of behavioral, neurobiological, and biochemical research has expanded our understanding of how nervous systems produce behavior. We have a good grasp on the neuroarchitecture of brains, including our own. Our understanding of emotions and how they interact to produce behavior continues to advance (e.g., Panksepp, 1998). We're to the point of exploring the brain chemistry of behavior, the molecular basis of what motivates us.

Paul Zak's work, entertainingly presented in *The Moral Molecule*, proposes that the hormone oxytocin, which he dubs the "moral molecule," profoundly shapes human behavior by reinforcing prosocial actions that in our

evolutionary past provided survival and reproductive advantages. While much of human behavior is learned, many of our actions are built-in responses to external events or objects. Such stimuli or conditions are said to be "reinforcing." One can distinguish positive reinforcers (food, safe hiding place, a good-looking man or woman) and negative reinforcers (pain, scolding, social isolation). Oxytocin is a profoundly powerful chemical reinforcer. When our brains produce a rush of oxytocin, it floods the same brain areas as pleasure-inducing drugs, and can also release a cascade of other feel-good chemicals – notably serotonin and dopamine.

Oxytocin first emerged in the study of human behavior in the context of reproduction. For example, a woman in labor releases large amounts of oxytocin, which facilitates birth by causing uterine contractions. Nipple stimulation releases oxytocin, which causes cells lining breast milk ducts to contract, facilitating milk release; at the same time, oxytocin accounts for a mother's pleasure in breastfeeding. All of these effects clearly facilitate successful reproduction.

Research is revealing how this multi-purpose reinforcer also facilitates other physical and behavioral responses, such as pair bonding and empathy. *The Moral Molecule* recounts years of blood-extracting experiments. In its

pages, Zak explores how natural selection has used this built-in drug of pleasure as a prime tool to steer us into actions that enable successful survival as extremely social beings. Zak first explores oxytocin's influence on individuals, then on close personal relationships, and finally on society as a whole. He stipulates early on that the vast majority of people are primed to follow the "Golden Rule" (put another way, that we are essentially "good"), and that "to elicit that naturally occurring, benign behavior all we have to do is to create the circumstances in which oxytocin can exercise its influence, which means, in part, keeping other hormonal influences out of the way" (Zak, 2012, xviii). Later Zak mentions testosterone in particular as a key hormone that interferes with oxytocin's positive effects.

A theme weaving throughout the book is the role of trust in facilitating successful reproduction and social living. Zak's early work on economics had shown that the most important factor determining whether a society does well or remains impoverished is trustworthiness. More important than natural resources, education, quality health care, or even a people's work ethic is how much individuals can count on reciprocal trustworthiness of fellow citizens (Zak, 2012, xix). When we are given someone's trust—when someone does something to show us that they trust us—we get a hit of oxytocin. And this sense of feeling good causes us to trust in return. All that is needed to trigger the release of this moral molecule is to give someone a sign of trust...even a simple hug. It's a fascinating concept!

Zak begins by recounting his participation in a wedding. The bride was aware of his research on oxytocin being a mediator of moral behavior. She invited Zak to sample her oxytocin blood levels before and immediately after her wedding, to see if the wedding's emotional uplift would alter her oxytocin level. Indeed, she wanted him to take samples from the groom and any other guests who were willing subjects. The logistics of blood-drawing and analysis at that wedding and many other of Zak's research venues often make amusing reading. The

wedding results were much as expected: the bride's levels shot up 28 percent, and for other people tested, the oxytocin increase was in direct proportion to their emotional engagement in the ceremony. Zak noted, however, an apparent anomaly - the increase for the groom's father was 19%, but only 13% for the groom himself. Why? Testosterone interferes with oxytocin release, and immediately after the ceremony there had been a 100% spike in the groom's testosterone level!

The book's broad scope covers the evolution of trust, the pathways by which oxytocin works to create that "good feeling," how life experiences and other factors can interfere with oxytocin's prosocial effects, how this biology intersects religion, why greed isn't good for individuals or societies, and how to create a bottom-up democracy. The author makes the case for a link between oxytocin and empathy, morality, trust, love, and economic prosperity, all via a "virtuous cycle" (trust → oxytocin → empathy → morality → trust, etc.; p. 64). In *The Moral Molecule*, Zak is exploring the evolutionary rootedness of morality, which - at least at the first glance - seems to be a philosophical rather than biological concept. For example, in Chapter 2, discussing the evolution of trust, Zak describes lobster mating. The female must jettison her protective shell to facilitate mating. She must "trust" the male at some level because males are usually treated as a competitor or even a threat. The chemical involved in coaxing the female to doff her shell and the male to protect her and treat her gently are ancient precursors to oxytocin. From this Zak concludes: "The fact that the precursors of trust and of reciprocity are so primal, that the ancestral DNA of our moral behavior is embedded in cells throughout the body, suggests pretty clearly that what we now call morality is not some civilizing afterthought, or a frill that runs counter to nature, but, in fact, something deeply connected with basic survival (Zak, 2012, 29)." Again, in another chapter, "Moral Markets" (pp. 158-183), which explores the relationship of oxytocin and testosterone to economics, Zak writes, "Morality is not wishful thinking—it's biology [...] behaviors that align

with pro-social behavior, commonly called moral behavior, aren't adapted from a Sunday school lesson but are time-tested survival strategies, shaped by the harshest realist of all, natural selection" (Zak, 2012, 167-168).

Arguably one of humanity's most immoral behaviors is war. The Moral Molecule does not address war in detail, but Zak's work on the effects of oxytocin, and its "antagonist" testosterone, are relevant in three notable ways. First, there is a well-demonstrated relationship between testosterone levels and both physical aggression and dominance preoccupation, two major causes of war. With men generally showing higher testosterone levels than women, Zak's and others' work adds to our understanding of why war is overwhelmingly a male preoccupation.

Second, Zak's research indicates that levels of oxytocin and testosterone differ between men and women. In all his experiments, women consistently showed higher levels of oxytocin and, on average, showed greater levels of empathy (p. 67). Zak argues that human evolutionary success has depended on a balance between differing male and female dispositions that are fueled by oxytocin and testosterone. Similarly, Hand (2010) argued that increased participation of women to create male/female balance in governing bodies may be a necessary condition to end armed conflicts. Women's higher capacity for empathy should be better utilized in peacemaking, peacekeeping, and peacebuilding efforts, as this capacity for empathy is likely to be critical in strengthening a sense of oneness with the global human community which seems a necessary condition if one aims to abolish war.

Third, The Moral Molecule makes the case that humans, facilitated by oxytocin, are basically prosocial—inclined to trusting, caring, cooperating, and morality. This gives encouragement to the proposition that nonviolent means (civil disobedience, nonviolent direct action) could deliver success in an effort to end war (cf. Sharp, 2005). It is generally posited that use of nonviolent means is the only realistic mechanism that might abolish war, i.e., we cannot abolish the violence

that is war using violent means. Successfully using nonviolent means to achieve social transformation ultimately depends upon an "innate human goodness", reflected in a shared sense by all parties of what is fair and just (Sharp, 2005). The goal to be achieved by protesting nonviolently is to win the opponent to your cause by appealing to their fundamental "goodness;" that is, by relying on the fact that the opponents' own prosocial sense tells them that they are on the wrong side, that the nonviolent protesters occupy the moral high ground. For example, that it is wrong to deny the vote to women simply because they are women (used by U.S. suffragists), that it is wrong for a foreign power (the British) to rule over a people (the people of India) (used by Mohandas Gandhi), that it is wrong to deny rights to people simply because of the color of their skin (used by Martin Luther King, Jr.).

In the chapter "Bad Boys" (pp. 76-101), Zak explores "bad" (and "good") behavior associated with testosterone. With testosterone, men generally more strongly than women exhibit behaviors such as risk taking, violence, crime, pursuit of sex, pursuit of status, and willingness to enforce prosocial behavior by punishing offenders. Zak also addresses why natural selection favors testosterone's "good" adaptive effects (e.g., fuels competitive drive to acquire a mate, drive for social status that leads to finding better ways to do things, decreases empathy which is important for killing during hunting).

The Moral Molecule is written for broad, including popular, consumption, obvious not only by the informal voice but because generalizations like the ones above are not always readily tied to supporting research. Each chapter has "notes," which are simply the bibliography. Consequently, the reader must figure out which book or paper provides supporting evidence for generations presented. This makes "The Moral Molecule" a less handy reference for academics.

Zak makes clear that both men and women secrete oxytocin and testosterone, and that behavioral traits he discusses—such as risk-taking, willingness to punish social offenders, empathy, generosity, and so on—are found in

both sexes. A reader may need to occasionally remind himself or herself of this, since individual men and women they personally know may not fit a particular generalization. Yet, men and women do differ significantly in many respects, differences that affect our social lives in ways that can be positively enhanced with better understanding of what motivates us in our personal and social interactions.

A book of such sweeping scope on topics of deep emotional interest will generate disagreement from experts, not only with regard to generalizations but also details. For students of human behavior, however, as well as for anyone interested in the human condition, Paul Zak's work is a significant, must-read leap forward in answering fundamental questions about why we do what we do and why we feel the way we feel.

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