The Science of Fiction

Evolutionary Explanations of Hypothetical Human Behavior
Volume 1

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# Contents

*Preface*
  Karthik Panchanathan  iii

**I Group Structure and Psychology**  1

*Intergroup Relations in Lord of the Flies*
  Krista Perry  2

*Bodily Organs and The Tragedy of the Jack on a Cellular Level*
  Daniel Ong  10

*Reach for the Sky: An Analysis of the Evolution of Leadership*
  Jeff Sinclair  14

**II Love and Sex**  22

*How a Beauty Learns To Love a Beast*
  Amanda D’Elia  23

*The Quandary of Homosexuality: Yet Another Unexplained Hole in Darwinian Evolutionary Theory*
  Ben Zolna  31

*The Mating Game*
  Laura Watson  39
## Contents

<table>
<thead>
<tr>
<th>Title</th>
<th>Author</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fight Love: Masculinity, Mate Choice, and Soap</td>
<td>Graham Unterberger</td>
<td>48</td>
</tr>
<tr>
<td>Orgasm: Evolutionary History, Motivations, and Repercussions</td>
<td>Kelsey Kaszas</td>
<td>56</td>
</tr>
<tr>
<td>Esmerelda and the Beast: An Inquiry into the Mate Choice of Esmeralda from The Hunchback of Notre Dame</td>
<td>Priya Lorenz</td>
<td>63</td>
</tr>
<tr>
<td>Odyssey: On the Development of Monogamy</td>
<td>Patrick Austin</td>
<td>70</td>
</tr>
<tr>
<td><strong>III Good and Evil</strong></td>
<td></td>
<td>78</td>
</tr>
<tr>
<td>Hiro the Hero</td>
<td>Anand Mehta</td>
<td>79</td>
</tr>
<tr>
<td>The Evolution and Advantages of Religion</td>
<td>Blair Pierroz</td>
<td>85</td>
</tr>
<tr>
<td>The Selfish Gene and The Heroics of the Last Kryptonian</td>
<td>Avinash Chandrashekar</td>
<td>92</td>
</tr>
<tr>
<td>The Wrong Childhood Collage</td>
<td>Peter Jacobsen</td>
<td>97</td>
</tr>
<tr>
<td>The Evolution of Adoption</td>
<td>Stephanie Pritchard</td>
<td>103</td>
</tr>
</tbody>
</table>
Contents

IV Emotions and Decision Making 110

On the Origin of Emotion: Animals, Humans, and Michael Scott
August Johannsen 111

Okonkwo’s Woes: The Evolutionary History of Human Guilt
Rob Warnock 119

The Impossibly Extraordinary Man
Ross Perry 126

Willy Wonka Evolves Schadenfreude
Tanya Vucetic 133

Jack Bauer: The Guilt Free Bad Ass
Nicholas Mohadjer 139

The Evolution of the Pursuit of Happiness
Matthew Isbell 146
Preface

The essays in this volume, papers written for my course, *The Origins of Virtue*, sit at the crossroads of art and science. Applying a Darwinian reading to works of fiction, they attempt to reveal aspects of the human condition. These writings span a wide range of academic disciplines, including evolutionary biology, cognitive neuroscience, social and developmental psychology, economics, and anthropology. What binds them is a shared commitment to understanding behavior from an evolutionary perspective. Following Niko Tinbergen, legendary ethologist, these essays attempt four kinds of explanations: at the proximate level, we are after the mechanisms underlying a behavior; at the ontogenetic level, we ask how a behavior gets to be the way it is over the course of development; at the functional level, we learn why natural selection favored a particular behavior; and, finally, at the phylogenetic level, we study the distribution of behaviors across a range of species. The fictional works brought under the microscope run the gamut from the silly to the serious, including William Golding’s *Lord of the Flies*, NBC’s *Heroes*, Chuck Palahniuk’s *Fight Club*, DC Comics’ *Superman*, Aldous Huxley’s *Brave New World*, Disney’s *Aladdin*, and Homer’s *Odyssey*.

In part one, “Group Structure and Psychology,” we discover what kids without adult supervision reveal about *us and them*; why human societies have more in common with unicellular organisms than you might think; and, what we look for in leaders and why most of us might be better off following.

In part two, “Love and Sex,” we find out how couples communicate their affections; why a princess pines for a pauper, while a gypsy jettisons a gimp; why we can still stand (and fall in love) though our minds are houses divided against themselves; what makes a *Homo sapiens* a homosexual; whether we orgasm by design or by accident; and, why humans are one of the only mammals to have undertaken the long and arduous odyssey from promiscuity to monogamy.
In part three, “Good and Evil,” we learn how we can be heroes despite our selfish genes; how early childhood makes us into saints or sinners; why I treat my dog Savannah as though she were my daughter; and, why we are designed to believe in God.

In part four, “Emotions and Decision Making,” we learn what emotions are and where they come from—“That’s what she said!”; why we are designed to pursue happiness, but not to appreciate it; why we take pleasure in others’ pain; why we are racked by guilt and why it’s a good thing we can’t escape that guilt to become extraordinary; and, why brain damage may be good for national security.

The quality of these articles resulted from the combination of the students’ efforts and excellent instruction. In the fall and winter quarters the students were immersed in the deepest of scientific questions—How did the Universe begin? How did Life evolve? How will the Universe end? They entered my class ready to think like scientists thanks to the professors, Tony Friscia, James Larkin, Bill Moore, and Blaire Van Valkenburgh, and the other teaching fellows, Lino Camprubi, Silas Hoffman, Kim Pollard, and Rachel Smith. As the instructor, I’d also like to thank the UCLA Freshman Cluster program for making a course like this possible and providing me with incalculable assistance. In particular, thanks to Greg Kendrick, Louisa McHugh, Susan Griffin, and Rachel Fretz.

The most important acknowledgment, of course, goes to my students, the writers of this tome: Patrick, Avinash, Amanda, Matt, Peter, Gus, Kelsey, Priya, Anand, Nic, Danny, Krista, Ross, Blair, Stephanie, Andrew, Jeff, Graham, Tanya, Rob, Laura, and Ben. Thanks for making this quarter so fun and so rewarding. Any insights you, the reader, may glean from this book reflect their intellects and efforts; any errors in reasoning or fact reflect my teaching!

Karthik Panchanathan
Los Angeles, CA
June 2009
Part I

Group Structure and Psychology
Intergroup Relations in Lord of the Flies

Krista Perry

In William Golding’s Lord of the Flies, a group of average young boys is stranded on an island without any trace of civilization. Their ensuing degradation into factions reveals a great deal about group formation and conflict in human nature. The first major problem encountered is the tendency to free ride as the boys attempt to cooperate and create a new “civilized” society for themselves. Later, the boys split into two distinct factions, one fundamentally cooperative and egalitarian and the other violent and held together by a leader’s coercion. Led by Ralph and Jack, respectively, these groups illustrate the basic nature of human group interaction as they create an ‘us’ and ‘them’ mentality on the island. However, when an outside threat is perceived, the rival factions are able to form a unified coalition. What exactly is a group? Why do people form groups? Why do we favor our ingroup and fight with the outgroup? The factions and coalitions formed by the boys in Lord of the Flies provide some explanations as they exemplify intergroup relations and competition.

Ralph is first elected leader of the boys and attempts to organize them into an egalitarian, democratic system of governance with a basic division of labor. He creates a cooperative group structure in which the members assist each other more often than they help outsiders. Similar phenomenon are seen in general studies of human behavior. Ernst Fehr et al (2008) ran a study involving the distribution of resources in various games for young children. One game in particular is called the pro-social game in which children must choose between a reward distribution in which they are given one reward and a partner is given nothing or a distribution in which both children receive one reward. As the children age, they show an increasing preference for benefiting their partner. Fehr (2008) shows that even among young children there
exists a “concern for the welfare of others” which often is based in parochialism and inequality aversion. However, in the world created by Golding, this egalitarianism breaks down quickly. Ralph develops a system by which some will hunt and maintain a signal fire, some will build shelter and some will find clean water. Additionally, the right to speak is determined by the equal passing of the conch shell. But as soon as factions and groups develop among the boys, ingroup favoritism and outgroup hatred plays a stronger role. Fehr (2008) states that “the children’s altruism and parochialism emerges simultaneously between the ages of 3 and 8 and is associated with a very strong ingroup bias at age 7-8 with very little willingness to share with an outgroup member.” So even by the age-based maturity level of Golding’s young characters, ingroup favoritism should exist strongly. Boys also tend to show a much stronger parochial tendency; compared with young girls, they are more accepting of inequality if it benefits an ingroup member in the envy game (Fehr 2008). They are more willing to accept a relative loss of reward if the relative gain benefits an ingroup member (Fehr 2008). The fact that Lord of the Flies is set with entirely young boys highlights this type of ingroup bias. Rather than share equally and improve the survival of all of the boys on the island, they would prefer that a greater share of the resources and a lighter share of the responsibilities fall to their own group members. Thus, the creation of groups on the island is critical to driving the plot and understanding the boys’ devotion to their factions.

What then, exactly, defines a group? Tajfel (1982) explains that a group requires both internal and external criteria. “Group identification” among the ingroup members themselves as well as an outside agreement that such a group exists are necessary to create a viable group. Individuals must be aware of their group membership and have some value connected to it. On the island, it is clear that both factions recognize themselves and each other as viable and concrete group formations. So, how do we form groups? Historically, groups can be created based on geographic, ethnic, or even seemingly arbitrary descriptors. In Golding’s story the boys split based on ideological differences—those that support Ralph support civilization and order while those that support Jack have a penchant for violence and power. Such a value structure is often based upon cues that cause an identification of differences between groups. Lonsdale et al found that this type of group identification may be due to a kind of “social badge.” The authors tested musical taste as a form of social badge that serves to identify group membership and contribute to an individual’s identity (Lonsdale 2009). The idea of a social badge is very relevant in the creation of the groups of boys on the island. Those that look similar band together in the creation of their factions.

Social identity theory can also begin to provide an answer to the question of why we form groups. On the island there truly is no value in the boys’ compe-
Intergroup Relations in *Lord of the Flies*

Krista Perry

...tion because everyone would be better off through cooperation and rational behavior on the collective level. Since resources are not frighteningly limited and have the ability to support all of the boys, they are better off sharing. Seemingly arbitrary differences between people can become a part of their identity and thus encourage them to improve the standing of those who share their identity. Known as social identity theory, the practice of favoring the ingroup is explained by the fact that it grants more prestige to the individual (Lonsdale 2009). Lonsdale (2009) found that seemingly arbitrary groups such as those created by differences in musical taste have stereotyping and ingroup favoritism in reward allocation. The argument is primarily that one feels better about themselves when their own personal ingroup does relatively better than the outgroup. It seems plausible that the boys of *Lord of the Flies* create groups in order to reinforce their own perception of their identity, making their group and thus themselves appear more prosperous.

A criticism to this theory is provided by Yamagishi, Jin and colleagues (1999) whose experiments suggest that ‘ingroup boasting’ is not enough to explain the favoritism shown to group members. After a series of 7 experiments based around minimal groups, Yamagishi and others argue that favoritism stems instead from a form of reciprocity. They found that without “multilateral fate control,” or the interdependence of subjects’ outcomes, individuals did not show an ingroup bias in their allocation of wealth. It is only when there is the possibility of reciprocation within the group that the ingroup bias is observed. One expects their group members to return favors and goods in the future and is thus more generous with them in the present than they are with outgroup members who are less likely to reciprocate. Yamagishi (1999) therefore criticizes the social identity theory, replacing it with a more economical explanation of generalized reciprocity of value. In reference to the feuding young boys on the island of *Lord of the Flies*, this theory does not appear to hold as well. On a personal economic level on the island, generalized reciprocity does not appear to be occurring seeing as most of the time there is not an actual good for which the boys are fighting. In a purely economic approach to ingroup favoritism, it is necessary that there is a realistic conflict over a physical commodity. However, social identity theory points out that categorization alone can create bias even when there isn’t a real conflict. Ralph and Jack and their followers are not fighting over a prized territory or some other resource. Ralph especially is more than amiable to cooperation and the sharing of goods and power. Therefore, the idea that ingroup bias is based on generalized reciprocity does not fully explain the behavior of the island groups.

Both of these explanations are ultimate level explanations; the behavior of humans in groups is compared to a model of what would be the most efficient or rational choice. Regardless of whether one prefers social identity theory or
generalized reciprocity, it is clear that people that form cooperative groups fare better than those that do not in terms of gaining resources and winning conflicts with other groups. Thus, the trait of “groupishness” in humans or favoritism towards ingroup members contributes to the reproductive success of its members and is more likely to be passed on as a heritable trait. In short, cooperation and favoritism for the ingroup are favored by natural selection.

While groups may be instinctually favored, they still need to be maintained in practice. As experienced firsthand by Ralph and Jack, it is necessary to create unity and cohesion within the group in order to create cooperation and order. Ralph attempts to do so by maintaining the symbol of the conch and holding meeting in which all have the right to express their opinion. Jack does so by creating a sort of cult around himself and creating rituals. While the two approaches differ in style, both clearly use conformity to solidify their group’s standing. As Ridley expresses, conformity is a powerful force in human groups. Experiments have shown that people will change their opinion when presented with unanimous opposition (Ridley 183). Humans have two sources of input when they make decisions in group settings: their personal judgment and the opinions of others (Ridley 184). This struggle is represented symbolically within *Lord of the Flies*. For example, Piggy represents scientific rationality and reason as he relies on his intellect to solve long term problems with Ralph following most of the time. But when Jack holds a frenzied hunt and a ritualistic reenactment with all of the boys, even Ralph gets caught up in it. The conforming pressures which help encourage “cooperation and sacrifice” for the good of the group can also turn violent as seen when Ralph and even Piggy participate in the murder of another boy named Simon (Ridley 189). Additionally, Ridley states that “ways of body painting, magical incantations and dance patterns are what distinguish one people from another” (Ridley 189). Powerful rituals can act to reinforce “groupishness.” These sorts of rituals in a hunter-gatherer society help create the cohesion necessary to work as a team. While such practices do increase the strength of group identity in the novel, they often translate into increased aggression towards the opposition. By defining themselves as distinct groups, the boys hinder their ability to cooperate on a macro level.

The creation of an ‘us’ and ‘them’ mentality can be strengthened by stereotyping and prejudice, a practice seen in the characters of Golding’s novel. He describes the boys in their groups almost from the very beginning. As the lead choir boy, Jack is an imposing, sardonic figure with his black-robed followers and powerful physical presence. In contrast, Ralph’s supporters are often characterized as the kinder, weaker individuals. Piggy is out of shape and whiny and the ‘littluns’ are clearly in no position to fight back physically. These extremes within the groups are then associated with all of the group members, even if the description does not actually apply. Through the accentu-
tuation of differences between groups rather than within, a ‘dehumanizing’
effect can even take place (Tajfel 1982). When the opposing group is seen as
so different that they are not even considered human, morality can lose its
hold on a society. For example, the loose social structure created by the boys
disintegrates quickly when Ralph’s group is portrayed as dangerous. In total,
three boys are killed either by negligence or hatred. Even Ralph barely escapes
death by the arrival of adult help. Such intergroup hatred even overrides in-
terpersonal amiability or friendship (Tajfel 1982); traitors in Ralph’s group are
a prime example when they convert to a new cultural norm and construction
of the ‘other’. Golding tries to point out that there is an inner savagery to hu-
man nature that reveals itself when removed from the controls of civilization.
However, his story also sheds light on the sheer destructiveness of intergroup
competition. Not only are the children fighting and failing to work towards
their eventual rescue, but the adults are simultaneously engaging in interna-
tional warfare. Ridley states humans have a “double standard of in-group
morality and out-group ferocity” (Ridley 193).

Clearly, the boys are not working in their own overall interest. Why, then do
groups compete? On the island of Lord of the Flies it is clear that the violent
competition and aggression between the groups is only harming their chances
to survive. They are wasting resources fighting each other that could other-
wise be put towards constructive activities. Additionally, important tasks such
as maintaining a signal fire are neglected in light of the more interesting strug-
gle between factions. Ridley illustrates that all primates engage in some form
of group competition. For instance, baboons create coalitions in order to have
sex with their females. By working as a group, they are still self-interested be-
cause they are “joining forces to achieve an end” (Ridley 152). When there are
limited resources or a power struggle for control, it makes sense for groups
to compete with one another from their individual perspectives although not
for the group as a whole. Just like the boys on the island, “throughout the
societies of monkeys, cooperation is encountered almost exclusively in the
context of competition and aggression” (Ridley 152). In the past, individuals
that belonged to competitive groups would have flourished relative to other
members of the species. Therefore, an evolutionary explanation can be seen
for the development of these traits in humans. Those that work as a group are
working in their own self-interest which passes down the behavior of forming
competitive groups.

Differentiating between ingroup love and outgroup hate is an interesting ques-
tion of causation for human group formation. Forming larger groups, espe-
cially those that compete with violence, requires some sacrifice from the indi-
vidual for the good of the whole. But are individuals more motivated by love
for their fellow group members or hatred for those on the outside? Halevy
(2007) addresses this issue head on with a study aimed at untangling this
ambiguity. The game created is known as the prisoners dilemma-maximizing difference game. Subjects were divided into two groups of three and were given the choice to contribute to a within group pool to benefit the ingroup only or a between group pool to benefit the ingroup while simultaneously hurting the outgroup (Halevy 2007). This structure clearly divides between working to help the ingroup, desiring to harm the outgroup, and withholding to protect ones own self interest. Halevy (2007) found that people were more generous in contributing to their group when an outgroup existed. People were also more generous when they were given the chance to communicate with their group members. Even without an enforcement mechanism, talk between the subjects facilitated cooperation. Throughout the experiments, the amount that was donated to the between group pool remained relatively low. This shows that most of the time, people do not appear to be motivated primarily by a desire to harm the outgroup. However, a change in game structure reveals an important clarification. When the only way to benefit the ingroup involves hurting the outgroup, ingroup members are more than willing to compete with the outgroup and cause them damage. They also make the assumption that the outgroup is making that same decision. In *Lord of the Flies*, it is apparent that the boys are operating in a system more similar to the second game structure. At least in their minds, their success as a group requires the detriment of the other. Thus, they do not hesitate to harm outgroup members when it will benefit their group and they believe that the other faction will make similar decisions. Often from the top down, the factions of boys on the island make decisions to consciously harm the outgroup because they feel it is necessary for their own interest.

In order to maintain a competitive group, hierarchies are relied on for leadership. The patterns of hierarchy are “more marked among males than females” (Ridley 157), again making the only male society of the island a powerful illustration. Rank matters because it creates legitimacy and reliable patterns of support. Chimps even manage to use their coalitions to challenge the hierarchy, a trait shared by humans (Ridley 157). For instance, Jack gathers support from others in order to challenge Ralph as leader. However, the main difference in human competition is the introduction of weaponry. By inventing weapons, individual power is equalized and incentives are increased to join a large coalition (Ridley 165). Large, equal groups require that leaders use persuasion as well as coercion; one of the most powerful methods of persuasion is the creation of an enemy concept. If you blame an outside agent for your problems or even just mark them as dangerous to your well being, it is possible to create cohesion within the group. Group competition can improve the standing of an individual group relative to the others while also improving its internal efficiency. Groups become most advantageous to the individual in the context of aggression and outside competition. Therefore, from a localized perspective, group competition is actually in each group’s self interest.
Intergroup Relations in *Lord of the Flies*  
Krista Perry

... even though it creates conflict and is harmful at the aggregate level.

While most of the novel focuses on the conflict among groups, there are rare moments of cooperation among all the boys. The various factions on the island of *Lord of the Flies* come together only when they are confronted with the fear of a beast or a monster lurking somewhere in the jungle. As seen throughout human groups as well as primates, an outside threat can bring groups together. The most important and largest coalition among all adult male chimps arises only when there is an enemy troop that needs to be fought (Ridley 163). When a common enemy can be found, factions find more importance in their similarities than their differences and are able to work together cooperatively. “External conflict does increase internal cohesion under certain conditions ... The external conflict needs to invoke some threat, affect the entire group and all its members equally and indiscriminately, and to involve a solution” (Tajfel 1982). The beast the boys believe to inhabit the island meets the conditions that he believes is necessary; it endangers each and every one of them and thus they turn to each other to try to find a solution. Though it turns out that according to Golding the beast is actually the symbolic evil of their own nature, they were temporarily able to work together to search for it and attempt to destroy it. By emphasizing the outside enemy, the internal conflicts subside and allow cooperation to flourish for the duration of the threat.

*Lord of the Flies* through microcosm and symbolism displays many features of group interaction. Our relationships with other individuals are largely impacted by the nature of their group identification. Social identity, generalized reciprocity, and intergroup competition are all major explanations of group formation and the resulting ingroup favoritism. Even in primates and small children, it is clear that group formation is important to society and relationships in general. Thus, while Golding may be raising questions about the inherent nature of humanity, his characters also answer some questions by the very nature of their interactions. Cooperation, competition, and conformity are all illustrated in the behavior of the young boys and less obviously, in the world at large. Often times, cooperation and competition appear inextricably linked. We cooperate in order to compete with each other, and the threat of a potential competitor can actually encourage more cooperation. As Ridley states, “we may be among the most collaborative social creatures on the planet, but we are also the most belligerent” (Ridley 193).
Krista Perry is a History and Political Science major at UCLA who is happy to have traded the horrid monotony of Southern California suburbia for a piece of the big city. Occasionally, however, she feels the need to get away and enjoys relaxing vacations and tropical venues, so long as they have not been overrun by violent little boys. Last year, Krista was lucky to attend Girls Nation and spend a week in Washington D.C. observing the pinnacle of “peaceful” group interaction and reciprocity. She hopes that one day humans will learn to overcome their tendency to form hateful groups.

References


Bodily Organs and
The Tragedy of the Jack
on a Cellular Level

DANIEL ONG

Italy during the Renaissance saw an unusual explosion in the population of a rare breed: the aptly named Renaissance man. Leonardo da Vinci is the creator of many of the most famous paintings in the world, among them The Last Supper and the Mona Lisa. He lived and worked through the 15th and 16th centuries as a painter in Italy, yet he was also an accomplished anatomist, scientist, and inventor, among other things. His artistic contemporary Michelangelo Buonarroti took the helm of the Renaissance with his sculptures, which include the Pietà, David, and Moses. His masterpieces earned him the title of one of the most recognizable sculptors in art history. Yet even furthermore, he is also well known for his architecture and paintings. Leonardo and Michelangelo are only two of several examples of the kind of people that made the Renaissance a unique period in time; however, the Renaissance man, the Jack-of-all-trades, is a rarity outside of 16th century Italy. The title of Renaissance man has definite appeal, and its possibilities are staggeringly attractive. What new levels of independence can a person reach with such broad degrees of expertise? However, society and history have proven that the best hunter can’t always be the best farmer, and that division of labor is the most efficient and natural way for people to live together. But, how has evolution weighed in?

Jack-of-all-trades, master of none: Michelangelo and Leonardo were surely versatile men of the Renaissance but perhaps they do not quite fit into the mold of the Jack-of-all-trades. After all, they were not known for athleticism or
agriculture, to name examples, and most historians would agree that they in fact were masters of their many trades. What was so special about 16th century Italy that the muses decided to give them their visits? The answer is not the issue, however; the fact at hand is that even the multi-faceted Renaissance men still depended on others to live much like we do. They did not grow their own food nor did they provide their own salaries; they did not even make their own paints and canvases or procure their own marble from the quarries. It is very much the work of experts in other trades of society, the farmers, the patrons, the miners, that allowed Leonardo’s kind to aggrandize and win the title of Renaissance man, defining the era by their works. Why is this?

Two centuries after the High Renaissance, Adam Smith was applying the principal of division of labor into the study of economics in his book The Wealth of Nations. Smith’s seminal work describes the benefits of division of labor in a group: the society runs more efficiently and output for all involved parties is generally greater. However, the need for a meritocracy, in which authorities assign professions to individuals based on ability, does not exist, according to Smith. Humans have a natural tendency to divide labor amongst members of a group, no matter which society is in question.

Where does the tendency come from? Perhaps this is a question that Smith was not concerned with in the 18th century but its nature is grounded in the principles of natural selection. Smith, as well as history, has proven that division of labor works. Therefore, the natural tendency must come from each of our past generations, from our parents to our ancestors ages ago. In retrospect, our parents and their parents (and so on) each live in a society designed in this fashion. My father specializes in computers while my mother is in the medical field. Perhaps my ancestors were master hunters or gatherers, to use the caveman stereotype. But, even if so, Smith and our ancestors alone cannot explain division of labor on the scientific level.

In addition to its presence in society, division of labor is applicable on a biological level, if we take the human body as an example. Each organ is suited to a different task: the heart oxygenates the body and the liver filters toxins, and so on. Each organ is adapted to carry out its job rather than be chosen for that particular task.

And on the microscopic scale, the organelles of a cell follow the same principle: instead of each component delivering a portion of each function the cell must carry out, every component is suited to a different function in order for the cell to live and do its own task, which, again, is specific to the type of cell it is.

In order to understand the evolution of division of labor we must trace it back
to the simpler forms of biological life: unicellular organisms. Unicellular organisms apply to division of labor because, in comparing them with other cells, they are independent. They do not need other cells in order to carry out their lifestyles. This would be the equivalent of the Leonardo da Vinci that did happen to grow his own produce and was also a deadly hunter. In other words, several forms of bacteria do not need division of labor amongst themselves. So then, why did it come into place? The answer lies in proteobacteria, which is considered the simplest form of multicellular life, in the form of colonization. In the case of proteobacteria, a novel idea was born and so was the first ever fruiting body colony. In the fruiting body, certain proteobacteria cells are responsible for the task of extending the colony’s reach in the form of stalks or stems while the others are in charge of reproducing (the “fruits”).

After this instance on the evolutionary timeline, colonization becomes fairly frequent, including the oldest living structures on earth today, the stromatolites. Stromatolites are made of cyanobacteria, which is the first photosynthesizer. Plant cells make use of cyanobacteria much in the way mitochondria are utilized by other cells, through symbiosis. This is another way that cells may differentiate the specialties of other cells for the benefit of the whole.

Organelles do different tasks for the cell, and the cell does different tasks for the organism, and so on. But how does the individual come to serve his or her place in the group or in a society? Smith’s rhetoric on economy applies to the survival of a group, as well. Rather than benefit from increased output, the individuals in a group of living organisms benefit from increased fitness or survivability. Just like the fruits in the fruiting body of proteobacteria, male bees are born solely for the purpose of fertilization. And it’s not like they have a choice. Division of labor is as hard-wired into their behavior as their sex drives are. Why is this so? Why has evolution called for male bees to live like this? Like the task division of any other species, this lifestyle results in the best chance of survival for the hive. If males were inclined to work within the hive they would have to undergo adaptations that would increase their work output and decrease their mating efficiency; perhaps even males in competition could injure each other and hurt the flow of labor in the hive overall. Summarily, male bees owe their entire existence to the division of labor within the hive because they are there to do one the one thing that other bees cannot do so effectively.

We have clarified that it would be impossible for one to ignore the division of labor within a society because everyone within that society is so dependent on the abilities and expertise of others. It would be very unsuccessful for a person to devote the time to mastering every trade because he or she would not live long enough and it’s also virtually pointless since other people are around to carry out the same deeds. In fact, those other people are equally
The Tragedy of the Jack Daniel Ong

dependent on that person to contribute back to society with his or her skills or abilities. Division of labor is grounded in evolution because it serves as the fundamental principle behind multicellular life. It is not a question of whether or not the Jack-of-all-trades can really exist; rather, the tendency for people to run a society based on the certain strengths of its diverse members is natural because we have evolved from organisms that make use of the principle. It is a question, however, how so many aspects of societal life can be answered by evolutionary history.

References


Reach for the Sky:
An Analysis of the Evolution of Leadership

JEFF SINCLAIR

It is impossible to imagine a world without leaders. Try to picture a history lacking such hugely important people as Hammurabi, Genghis Khan, Adolf Hitler, Mao Zedong, Nelson Mandela, Martin Luther King, and John F. Kennedy, to name just a few of the world’s most influential leaders. Leadership has had and will continue to have such massive affects upon human life that understanding it is of huge importance. However, due to the difficulty of studying such a multifaceted and complex subject, this is no easy accomplishment. Much of the current knowledge of leadership’s evolution, the relationship between leaders and followers, and group loyalty is largely speculative. There are many theories and possible explanations, but considerably fewer definite answers. This paper will attempt to explain and analyze a few of the more definite hypotheses of contemporary leadership knowledge.

Besides the historical leaders previously listed, there is also an entirely separate genre of leaders. This group consists of fictional personages such as Toy Story’s Sheriff Woody, a beloved character who is firmly imprinted upon the minds of a generation. In many ways, Woody is symbolic of leaders as a whole. The remainder of the toys belonging to Andy can be viewed as representatives of a force without which leaders would be rather worthless: the followers. Even in this fictional movie series, leadership has a massive influence upon the characters and the direction of the plot. Interestingly, there are many manifestations of modern leadership theory throughout Toy Story.

But what exactly is leadership? It is a concept which can be defined in many
ways, so before discussing the evolution of leadership and how it is embodied in *Toy Story*, it is necessary to first define leadership. One way of defining leadership is to split it into parts: (1) Influencing individuals to contribute to group goals; and (2) Coordinating the pursuit of these goals (Van Vugt et al., 2008). Mark Van Vugt summarizes these two goals as “Building a team and guiding it to victory” (2008). Robert Hogan and Robert Kaiser’s “What We Know About Leadership” presents an alternative version of this definition, describing leadership as temporarily convincing people to forego their own selfish pursuits and work instead to further the interest of a group. As Hogan and Kaiser’s definition seems more concise and useful for analyzing leadership and its evolution, it is the version that will be referred to hereafter.

An example of the characters of *Toy Story* putting aside their self-interest occurs when the plastic army men figurines willingly place their lives on the line at the start of the movie in order to spy on Andy’s birthday party. This act benefits the entire “tribe” of toys because of the information they gain: the knowledge of what new toy or, in Woody’s case, what new competitor for attention (“he [Woody] has been Andy’s favorite since kindergarten”), will soon be added to Andy’s collection (*Toy Story*, 1995). For the individual army man, the fitness gains of going on the expedition are far outweighed by the danger of the mission, as would testify the unlucky soldier who unsuspectingly had his leg broken by Andy’s mom’s heavy foot. That they undertake the operation regardless of this imbalance is indicative of strong leadership and group loyalty, topics which will be covered in more detail later.

Besides there being multiple definitions of leadership, there are also several reasons that it could have evolved. One potential reason is that when collective action becomes necessary due to external pressures, social groups are forced to answer the questions of what to do, and how and when to do it (Van Vugt et al., 2008). As collective action was demanded by such vital activities as hunting, group defense, and communal parenting, it was an almost constant companion to human evolution. One way the questions of what, how, and when to act can be answered is by an individual (acting as the leader) taking initiative and “providing direction while others acquiesce and follow that direction” (Van Vugt et al., 2008). This appears to be the most influential source of leadership in *Toy Story* as Woody frequently suggests courses of action, which are generally then followed by the remainder of the toys. Furthermore, when another toy takes the lead, such as the occasional demonstration of boldness by Mr. Potato Head (for example, his repeated defamation of Woody’s motives regarding Buzz Lightyear), the remainder of the toys seem just as apt to follow him. However, the source of human leadership is doubtlessly more complex; it probably resulted from a combination of this source and several others.
Another likely reason for the evolution of leadership is that the necessity of peacekeeping created a role for an individual to intervene in conflicts before they overwhelmed the entire group. This is a very reasonable possibility due to anthropological evidence that early human life was marred by nearly constant conflicts. The final hypothesized reason is that being well organized (“deferring to a central command”) enhances group performance relative to the performance of poorly led and organized groups. This would cause structured groups to be more likely to prevail in the frequent inter-group warfare of human evolutionary history. (Van Vugt, et al., 2008)

Alone, the toys could never have accomplished the feats that they managed to pull off as a cohesive social unit. But, provided a bit of leadership, they prevail against even the most testing of challenges. For instance, only by deferring to one member and combining their unique prowess do Woody, Buzz, and RC (the remote control car) triumphantly return to the moving van and their loving owner at the end of the movie.

According to Van Vugt’s paper, “Leadership, Followership, and Evolution: Some lessons from the past,” there were four main stages in the evolution of human leadership. Each of these stages corresponds to an increased group size and improved structural system. The first, pre-human leadership, is based mostly on simply following the group member that moves first, as witnessed in honey bees, baboons, schools of fish, migrating birds, chimpanzees, and Sheriff Woody. This does not necessarily account for why leadership evolved in humans, but “the continuity of evidence across species makes it at least plausible that the selection pressures that gave rise to leadership in nonhumans resemble those in humans” (Van Vugt, et al., 2008).

The second postulated phase, labeled as the band and tribal leadership stage, spanned the Pleistocene Era, starting 2.5 million years ago and lasting until 13,000 years ago. In this period, humans lived in hunter-gatherer bands of about 50-150 closely related members, a clan structure which resembles that of modern hunter-gatherer tribes (Van Vugt, et al., 2008). These groups were very egalitarian and democratic, and hence lacked stable leaders. When an individual, usually one of the tribe’s superior hunters or warriors (or in Toy Story’s case, a sheriff from the wild west), attempted to exert control, it is believed that they were met by determined resistance from the other members of the tribe (Van Vugt, et al., 2008). In other words, subordinates often collaborated to prevent superiors from gaining undue power, resulting in a democratic leadership style. This lengthy period provided the foundation of our evolved leadership psychology and is the source of the terms that we use to define leadership by today: fairness, integrity, competence, and humility (Van Vugt, et al., 2008). The characters of Toy Story have certainly surpassed this stage, as proposed courses of action are almost never met by unified re-
The next stage, the chief, king, and warlord stage, began with the development of agriculture. The existence of a dependable surplus for the first time in history led to massively powerful leaders and group sizes numbering in the thousands (Van Vugt, et al., 2008). Leaders normally had the power to redistribute that surplus, and frequently siphoned off some (or a lot, depending on the leader) of it for themselves and their loyal followers. The increased pay-off for chiefs attracted shrewd, resourceful leaders for selfish reasons. Relative to the preceding period, it became very difficult for families to move away or defend themselves from these potentially exploitative leaders due to a loss of autonomy (Van Vugt, et al., 2008). Strength of arm was generally the easiest way to higher power and prestige during this period, as witnessed by the rise of warlords and the soldier class.

Lastly, Van Vugt suggests human evolution entered the state and business leadership phase, beginning 250 years ago (with the Industrial Revolution) and enduring through today. He claims that, whereas the industrialized world is currently in this stage, undeveloped and developing countries are still mired in the previous stage due to the presence of domineering warlords and slave-like workers. Citizens and employees of modernized nations are now “free from the predations of their leaders,” producing a reversion of power back to followers (Van Vugt, et al., 2008).

However, the balance of power is not as heavily in favor of the followers as it was during the tribal leadership phase. This variation leads some people to believe that modern leadership does not meld perfectly with our evolved leadership psychology. Part of this mismatch is due to the structured nature of modern leadership. Contrastingly, during leadership’s evolution it was situational; leaders were selected based on who was the most capable of performing the specific task at hand. Furthermore, the rule of ancestral leaders typically relied upon legitimization by their followers. However, in modern organizations followers rarely have the ability to sanction their bosses. These are hurdles which contemporary businesses and governments must traverse before they can function at their most effective level. (Van Vugt, et al., 2008)

Part of our leadership psychology involves an innate sense of the qualities a leader should have. This sense is exactly what has led to presidential candidates using podiums of varying heights depending on their own height during debates. This clever maneuver was done in order to prevent height, a factor which doesn’t have an effect upon potential presidential functionality, from influencing voters’ decisions. This same instinctive selection of particular qualities in leaders caused the toys of Toy Story to instantly be drawn to Buzz Lightyear upon his arrival; boldness and strength are two attractive qualities in leaders. Relative to Woody’s awkward scrawniness, Buzz’s tough
appearance make him a more attractive leader. Knowledge of human evolutionary history helps explain why we often unconsciously select leaders based on such seemingly unimportant characteristics as strength, height, and weight (Van Vugt, et al., 2008). Because leaders with these attributes would have aided groups of early humans to thrive and survive, it would have been sensible to select leaders possessing them. Hence, the continued selection of physically impressive leaders is at least partially due to our early history.

There are many other qualities that leaders are expected to, and commonly do, have. Extensive research has been done in this field in order to determine why this is. Among the characteristics that are often correlated with leadership are assertiveness, boldness, initiative, need for achievement, proactivity, and risk taking (Van Vugt, et al., 2008). These traits all contribute to the likelihood of acting first, which makes individuals much more likely to become leaders. Furthermore, intelligent people are more likely to be the first to recognize that there is a need for leadership (Van Vugt, et al., 2008). This, combined with the fact that an intelligent leader is expected to be a better leader, explains the correlation between intelligence and leadership. Moreover, leaders should be perceived by followers to be benevolent (willing to give followers their fair share of the pay-offs) and competent (in order to maximize those pay-offs) (Hogan and Kaiser, 2005; Van Vugt, et al., 2008).

Van Vugt presents the key observation that leadership cannot be studied apart from followership. Like Sheriff Woody and his nemesis turned best friend Buzz Lightyear, they are two inseparable forces. An analysis of followership reveals a potential obstruction to leadership’s evolution. Leaders nearly always receive bigger pay offs (whether they be material or in the form of prestige and its secondary benefits) than followers do. Natural selection is based on relative advantages, so under this condition there is no advantage to choosing the follower strategy. And yet in Toy Story, there are many very fit followers—Mr. Potato Head, Bo Peep, RC, Rex, Sarge, Slinky, Lenny, Etch—and yet Woody and Buzz are the only potential leaders. Obviously, followers are indeed common in the real world as well, so there must be something more going on. The existence and prevalence of followers can be attributed to various sources: the relative costs of the roles (the cost of competing for status outweighs the benefits of being a leader); followers are forced to “make the best of a bad situation in which they cannot be leaders themselves”; and having to observe how others lead before an individual is fit to lead (Van Vugt, et al., 2008).

One final explanation is perhaps the most interesting. Cooperation and coordination lead to higher aggregate pay-offs to the group. Because of this (which in an economic sense can be viewed as specialization and gains from trade), groups with “effective leader-follower structures” are likely to have consider-
ably higher fitness than ones without such structures (Van Vugt, et al., 2008). The between group fitness advantage supports the follower strategy because individuals in cooperative groups are better off than they would be by themselves or in an uncooperative group, regardless of the fact that the leader is even more well off than the followers.

Without followers, leaders do not exist and cannot receive higher pay-offs. This is not problematic when the interest of followers and leaders converge, because it is advantageous for followers to go along with the leader. An example of such a time is during a group emergency, when it becomes important for a group to be able to act quickly and decisively. An example of an emergency of this type in *Toy Story* is when, stuck in Sid’s (Andy’s toy-torturing neighbor) bedroom, Woody quickly and effectively organizes a mission to escape his hellish prison. Despite the risks it presents, the followers, in this case Sid’s disfigured toys, are more than willing to aid in his mission. Their willingness to assist Woody is caused by the advantage they will receive by following his lead and ensuring that everything goes as planned; if they are successful, then Sid will stop tormenting them. This situation is a perfect embodiment of Van Vugt’s statement that, “In emergencies, the interests of leaders and followers converge and followers readily defer to the decisions of a single individual” (Van Vugt, et al., 2008).

However, the situation is not as straightforward when the interests of leaders and followers diverge. This condition is much more common in the real world; for example, it is in employees’ interest to demand higher wages and work less, while it is in their boss’s interest to keep that money as profit and enforce more working hours in order to maximize profit. Furthermore, except in times of inter- or intra-group conflict or an emergency, individuals tend to perform more effectively without a leader, particularly when doing routine tasks (Van Vugt, et al., 2008). When a group is not suffering an emergency and the interests of leaders and followers diverge, “leaders must encourage participation in order to ensure the acceptance of their decisions” (Van Vugt, et al., 2008).

In order to accomplish this feat, leaders utilize various strategies to consolidate their power. In response, followers have developed strategies to prevent exploitative leaders from taking advantage of them. In a manner similar to the escalation of adaptations between predators and prey, this discord probably led to an evolutionary “arms race” between the strategies of followers and leaders. By constantly looking out for their own interests, followers naturally keep leaders from exploiting them. Misbehaving, overbearing, or despotic leaders can be (and are) ridiculed, disobeyed, sanctioned, deposed, ostracized, or even killed (Van Vugt, et al., 2008). An example of a leader’s misbehavior leading to serious ramifications occurs when Woody is ostracized
by his followers because of his attempt to get rid of Buzz Lightyear for threatening his position as leader. Jealous of the attention Buzz receives from Andy, Woody sets his mind to reaffirming his position as Andy’s favorite toy. After he somewhat unintentionally knocks the space ranger out of Andy’s second floor window, Woody’s followers lose trust in him and his ideas.

Another interesting concept related to leadership is group loyalty. Group loyalty is defined as a member of a group choosing to remain in the group when it would be more beneficial to him/her to leave (Van Vugt, et al., 2004). This phenomenon has significant implications upon leadership. Whereas many public goods dilemmas allow only for the options of cooperating, defecting, or free riding, research on group loyalty addresses the additional choice of leaving the group in order to invest elsewhere, whether it be privately or in another group (Van Vugt, et al., 2004). High identification with the group corresponds to a higher chance of remaining in the group, even in the presence of a highly attractive exit option. Under this condition, high identifiers show a greater desire to remain in the group than do low identifiers. From this fact Van Vugt and his coauthors conclude that social identity acts as a “glue” to hold groups together when they would otherwise fall apart.

There are several ways to determine whether social identity exists within a group. Group loyalty can be manifested in several forms: positive emotions such as joy, empathy, and happiness; cognitive elements, including trust in other members and an optimistic outlook of the future; and behaviorally through sacrifices made to help the group. Also, when group loyalty is high, individuals view themselves primarily as group members. Unsurprisingly, when group loyalty is low, they are more likely to think of themselves as individuals. (Van Vugt, et al., 2004)

In summary, leadership is a concept that has been a constant companion throughout mankind’s evolution, but is only just beginning to be understood. It is often a difficult topic to research and evaluate due to the seemingly infinite variables that affect it and the many potential explanations. However, leadership’s massive impact upon society makes understanding it all the more important. Continued research of this type is vital to comprehending our evolutionary history and adapting the structure of modern leadership to better fit with our evolved leadership psychology.
Hello! For those of you who don’t know me, I’m Jeff Sinclair. Here is some boring information about me: I am pursuing a Spanish minor and, as of now, a Business-Economics major. Now time for the fun stuff. I love soccer. Go Chelsea! I also love the Yankees. Go Yankees! Anyway, regardless of whether you agree with the teams I cheer for, I hope you enjoy my mildly thrilling essay!

References


Part II

Love and Sex
How a Beauty Learns To Love a Beast

Amanda D’Elia

The ability to aptly communicate affection with a partner in the beginning of a relationship often precedes a successful intimate relationship. The problem is finding the best way to communicate affection in order to show romantic and sexual interest in a possible partner. Looking at a peculiar case of love in Disney’s Beauty and the Beast, both Gaston and the Beast pursue Belle, the heroine of the popular children’s movie. So why is it that the Beast’s affections are accepted and returned while Gaston’s are vilely rejected? The Beast is not the most suitable mate as he is a claw-bearing monster, while Gaston is the town’s most handsome and most successful hunter. It is the Beast’s aptitude in communicating affection to Belle and Gaston’s utter failure that give Beast the advantage in winning her reciprocal affection.

Affection is considered a universal need which helps create the human phenomena (Etzioni, 1968). It contributes to a human’s mental well being, physical health, and performance abilities and impedes loneliness and depression (Floyd, 2006). The ability to communicate and feel affection with others is an important part of relationships often affecting their formation, maintenance and quality (Floyd, 2006). From birth humans require a certain amount of affection to become successful members of society. The amount of affection received throughout childhood greatly affects people and how they socially interact (Floyd, 2006). Based on J. W. Prescott’s Somatosensory Affectional Deprivation Theory (SADT), infants require sufficient stimulation of senses such as touch, smell, and movement to form a primary affectionate bond with their mother figure. This expression of affection at a young age affects the infant’s future ability to form secondary affectionate bonds in adulthood such as with mating partners and offspring (Floyd 2006). SADT can even predict
violence and drug use in humans deprived of this early affection. Though not much is known about Belle’s childhood, she has a strong relationship with her father, Maurice, though she seems to have no mother. The strength of their relationship suggests that as an infant and child Belle received adequate affection making her apt to express affection to others. Their relationship is one of reciprocal care, concern, and love. This fact is seen in both Belle’s actions and Maurice’s.

Belle continually shows her affection for her father through her actions. An important part of communicating affection is through social supportive behaviors. These are actions that are signs of affection indirectly sent to the receiver. These would include providing assistance. This form of communication though indirect can at times be most potent. This is true in the case of Belle with her father. Belle first shows her concern when Maurice blows up the wood-chopping machine he is building for the inventor’s fair. In the scene, she shows genuine concern for his health and well being. These actions are her form of communicating affection to her father by helping him after the explosion. The next significant sign of affection she shows is when he disappears into the forest. She drops everything to go looking for him. It is at this point that she finds him locked up in the enchanted castle and makes a deal with the Beast to let her take his place because he is ill. She was willing to give her life to be locked in the dungeon of the castle forever to ensure her father’s security, which is the epitome of loving help. Her help is a sign to him that she loves him. Her final action of helping her father occurs when she leaves the Beast, leaving the luxury, company, and comfort she had grown to like in order to find her father and save him from dying in the forest. She gives everything for her father again to come to his aid. Belle again shows her affection through social supportive behaviors of assistance. Her willingness and eagerness to help her father communicates to him that she deeply cares and loves her. The continued stimulation is a necessary component. Because Belle can show affection to her father, she has the ability to show affection to others. Her father in turn shares this ability and equally communicates for her in a similar fashion.

Belle’s father reciprocally shows love and affection for his daughter throughout the movie in a similar fashion as her. It begins with his simple reassurance that he will relieve his daughter’s anxieties of town life by improving their situation. He continually shows acceptance for her off beat attitude towards gender roles and life, which the town find odd and unsettling. By accepting and helping his daughter come to an understanding about herself, he shows his affection through social supportive behaviors. Maurice also shows his affection for Belle in his attempts to save his daughter from the enchanted castle. After unsuccessfully recruiting help to rescue his daughter, he makes the journey through the forest though ill to find and save his daughter. In doing so
he nearly dies from disease, which shows the lengths to which he loves his daughter. This example is another extreme case of assistance offered as a form of communicating affection. Both Belle and Maurice can communicate their affections healthily and receive it. The extended stimulation on both parts and amount of examples from such a short period of their relationship shows the strength of their bond. Because Belle has a healthy relationship with her father and regularly communicates her affection for him and receives affection from him, she is enabled as an adult to receive and communicate affection properly (Floyd, 2006).

In studying the communication of affection, it is appropriate to look into how sometimes this act specifically in the initiation of an intimate relationship produces a negative affect. It has been suggested that in adult platonic relationships, or those of friends, unwanted flirting and affection will reduce the strength and quality of the relationship (Floyd and Voloudakis, 1999). In Beauty and the Beast this aspect is best seen in Gaston’s advances towards Belle. Though they are not exactly the best of friends they are polite acquaintances. However, Gaston’s brutish pursuit fails to win Belle. One aspect of his failure to get her to accept his marriage proposal is because she does not see their relationship in the same way as he does. He feels that Belle is greatly attracted to him while she feels they are just acquaintances. Thus, communicating his affections to her does nothing to strengthen and grow the relationship because it is unwanted. Affection shown to someone who does not feel reciprocally is generally unwanted and makes the relationship awkward and weak (Floyd, 2006).

The second aspect that affects why Gaston is unable to woo Belle is the way in which he tries to communicate affection. Gaston shows little actual affection in his attempts to win her hand in marriage. The first instance of his advances for her is a public pursuit of her through the town. The audience learns his plan to woo and marry her are because she is the only one pretty enough to match his own beauty making her the best. This motive though unknown to Belle reads through in Gaston’s actions, which turns Belle off. He tries flirting with her while nearly ruining her favorite book and insulting her view on female intelligence. Gaston explains how “it’s not right for a woman to read” because “she starts getting ideas and thinking”. Belle sees Gaston as primeval for this explanation, but he sees it as playful banter and invites her on a date. Belle quickly rejects his proposal. Here Gaston is trying to woo Belle by talking to her and showing interest in her more than other girls. He feels he is conveying affection by singling her out. He even dismisses his friend Lefou for insulting Belle’s father, which shows he is trying to impress her. But because Belle feels insulted by his words and actions and affection is not received, his flirting did not work. Gaston is unable to communicate affection to Belle because he uses methods, which are not as intense as other forms.
of communication, and he does not understand Belle. Shuntich and Sharpio studied the intensity and its affect on affectionate expressions. After asking a group of 102 students to evaluate different statements of affection, they found that some forms of communicating affection, in their case strictly direct verbal expressions, elicited a more intense response (Shuntich and Sharpio, 1991). For Gaston, this result would mean that because he did not use gestures fit to Belle. Floyd also explains that reception of affection is greatly hinged upon the receiver (Floyd, 2006). Gaston did not specialize his form of communication and thus Belle did not take his actions and words as affection. For these combined reasons, he was denied a date. Belle simply did not receive his expressions of affection.

Gaston’s next attempt at winning over Belle occurs after Maurice leaves for the inventor’s fair. In this attempt Gaston hopes to win Belle’s hand in marriage. His blurred and conceited perception of their last encounter and his overall charm give him confidence that he will be successful. His proposal is markedly self centered and very sexist from Belle’s modern female perspective. Gaston paints a picture of housework, sons, and hunting for Belle’s future. However, Belle has dreams of adventure and romance strikingly absent from Gaston’s description. Again Gaston feels that he is communicating affection by choosing her to be worthy of him for her beauty. Unbeknownst to him are Belle’s actual expectations of affection in a relationship as she has experienced with the relationship with her father. Gaston is Belle’s opposite in everything but mere physical beauty and thus again Gaston fails at communicating his affections. Thus, Belle again does not accept his proposal. As mentioned previously, Gaston does not specialize his form of communication, which is important to the reception of affection. The lack of affection received by Belle, who because of a strong relationship with her father understands a healthy relationship and affection, deters her from selecting Gaston as her intimate partner despite his strength, beauty and hunting ability. As Darwin explains, characteristics other than physical strength and beauty are important to mate selection and ultimately natural selection (Floyd, 2006). Selection can be influenced cognitively and psychologically. Because Belle finds neither affection nor qualities she finds necessary for a mate, she rejects Gaston.

The relationship between Belle and the Beast displays much more successful affectionate expression and is much more complex. The first quality of Belle and the Beast’s relationship is composed of anger and distrust. Though those may seem to fuel a bad relationship, these aspects prove important to eventually building a strong relationship. Belle hates the Beast for keeping her hostage away from her home. The Beast recognizes her immediately for her differences from average women of the time. She willingly gives herself to the Beast in place of her father to spare his life. His respect is seen in his surprised face when he agrees to her proposal. The Beast is a troubled character as seen
in his frustration and anger. After acting pompous, conceited, and selfish, the Beast, who was previously a human prince, is turned into the Beast by an enchantress. He is given fur, claws, and fangs. So ashamed of himself he becomes enraged with everything and secludes himself in his castle. The Beast acts out of character when he offers Belle a room in the castle and anything she wants. However, Belle knows little of the Beast and sees him imprisoning her at all as an injustice. The Beast offering Belle his castle, except of course the demolished, embarrassing west wing is a sign of affection in the Beast’s mind. Much like Gaston’s sad attempts to show affection, the Beast has not been able to specifically understand his target. Because there is no earlier stimulation of affection and no specialized communication forms that fit Belle as a receiver, Belle does not receive the Beast’s expressions of affection in his gesture.

Though the Beast has a rough start, he must learn to love in order to return to his human form, and he believes Belle is the fated girl to save him. He thus must communicate his affection to her and win in return hers to become free from the curse. The true turn in Belle and the Beast’s relationship comes when the Beast shows true affection and care for Belle. After running away from the castle frightened by the Beast’s tormented anger, Belle encounters vicious wolves that nearly kill her. The Beast comes and saves her by fighting off the wolves and takes a lethal injury in the process. The Beast shows true genuine concern for Belle’s life in the forest offering the ultimate sacrifice to ensure her safety, much like she did for her father. For Belle, the Beast is showing and communicating his affection for her through his actions. She returns this affection by choosing to return with the Beast to the castle and in the process saving his life. There was a great possibility that he would have died in the forest if she had not brought him back to the castle and cared for him. By again risking her own freedom, this time for the Beast, she reciprocates the affection shown to her. Both show affection through social supportive behaviors. These types of actions are especially important in early forming relationships because they are more covert and less direct than the other forms of communicating affection (Floyd, 2006). Though both are unspoken actions and neither discusses what happened, both sent and successfully received the expression of affection, care and concern. This initial communication is unspoken but noticed by both Belle and the Beast and leads to many other forms of affectionate communication.

The Beast’s feelings start to show through his rough exterior after Belle saves him, leading to various signs of his affection. The first gesture he makes is giving Belle a gift to show how he feels about her. Knowing Belle is an avid reader, he surprises Belle by giving her the castle library. She is overjoyed by the surprise. By giving Belle a thoughtful gift, the Beast shows her affection and love. Surprises and gifts are forms of communicating affection when well
thought out. In this circumstance the again social supportive behavior is able to work partly because the Beast thinks about Belle as a receiver and partly because Belle has already received stimulation from the Beast. Unwelcome gifts make a receiver feel awkward, but a surprise or gesture for someone with a previous relationship, which are given with sincerity and thought, are unique mechanisms to show affection and interest (Floyd, 2006). The Beast surprises Belle with a gift the no one else could get her that should would greatly enjoy. His thoughtfulness in giving it to Belle shows his feelings for her have greatly developed and his ability to communicate his affection for her has greatly improved. Belle in turn notices his effort and thoughtfulness and receives the affection. The gesture sparks feelings in Belle that are new and sheds new light on the man within the Beast.

The equally growing feelings lead Belle and the Beast to begin flirting, a form of affectionate communication involving body language, talking, and action. The flirting occurs in a snowy garden of the castle where Belle and the Beast play with the birds and throw snowballs at each other. Though it may seem like childish play, they are flirting with each other. Both give glances of wonder and embarrassment, looking almost shy. The quiet shy looks along with the silly antics cooperate to show mutual affection. This type of communication of affection is known as direct nonverbal gestures and can include glances, hugs, kisses and holding hands among other things (Floyd, 2006). Though varied by the length and amount of contact, these gestures are good forms by which to communicate affection clearly. These types of gestures are often known to be an important part of flirting. Flirting is measured by both women and men by various components including creativity, playfulness, and invitation, and these characteristics define the success of the reception of the flirting as affection (Abrahams, 1994). The flirting in the snow successfully plays on these components and thus is perceived by both as affection and an invitation to start an intimate relationship. Both question if their relationship is changing and transforming into something new. A second example of communicating affection by flirting is in the Beast’s attempt to learn how to use a spoon to appear more gentile and neat. The Beast cannot seem to figure it out because of his big paws. Belle does not disregard the act but recognizes it and finds it oddly charming as she in turn grabs the bowl and slurps the soup. The Beast in turn does the same. This exchange shows a simple form of communicating affection. It is simple flirting and nonverbal communication as well as supportive social behavior. Belle recognizes the Beast’s attempts to impress her and instead submits to his more bestial style of eating to make him feel comfortable and less embarrassed. This small action in a way is an aid to his discomfort at a very little scale. The flirting exists in the nonverbal cooperation and glances and smiles they give each other during the event. The simple actions and fleeting glances are what begin the transformation of the intimate relationship between the two.
The relationship is finalized in the last scenes of the film with the actions and words of both Belle and the Beast. This final sequence begins with a glorious ball. Belle and the Beast are wearing their finest gowns. First they have a large feast and then dance. Dancing and eating act almost like a date for the fledgling couple. The extended touching while dancing act as a nonverbal direct gesture of affection for each other. At one point Belle even pulls the Beast closer. These signs show that the continued stimulation has evolved the level of intensity of their expressions of affection (Floyd, 2006). Because they are more intensely showing their affection, their relationship has become more intimate. After they dance, Belle and the Beast go to a balcony to talk. The Beast shows Belle his treasured magical mirror. Belle learns her father is dying and the Beast allows her to go with the mirror to save Maurice and remember him. Despite his ability to limit her and keep her, he lets her go showing the utmost affection and love for her true desires as well as a social supportive behavior. He cares enough to let her go. Belle returns the favor by coming back to save him from the mob that has come to the castle to kill him. She winds up saving him by professing her love for him, which allows the spell to be broken. Belle stops at nothing to save the Beast from the mob. She grew to love him despite his repulsive appearance and questionable attitude for the good in him. She shows true affection through her ability to separate the vain from the beauty, which in essence is a social supportive behavior. However, it is at the very end of the movie with the words, I love you, that exhibit direct verbal communication of affection. Both through the end confess their love in the most unambiguous type of communication of affection (Floyd, 2006). This form of communication within this context is the most true profession and communication of the reciprocal affection and intimacy. By the end of the movie, both Belle and the Beast are openly showing and proud of their equal affection and love.

*Beauty and the Beast* provides a poignant example of the communication of affection. The movie addresses the three prominent forms of communication including social supportive behavior, direct nonverbal gestures, and verbal statements. It also exhibits the negative aspects in which communicating affection may result. Because Belle has a good parent-child relationship, she is aptly able to communicate and receive affection, and thus her relationships with her father, Gaston, and the Beast explore various important qualities of the communication of affection. The communication of affection is a greatly important aspect of human relationships and as seen in *Beauty and the Beast* has the ability to transform relationships.
References


The Quandary of Homosexuality: Yet Another Unexplained Hole in Darwinian Evolutionary Theory

Ben Zolna

Abstract

Homosexuality is a great paradox. Success in Darwinian evolution is gauged by reproductive success, but homosexuality is a behavior described by a lack of reproduction. How is this behavior that is exhibited by many people in many different ways so prevalent, and why has it yet to be selected against? As far as evolution is concerned, androphilic (attracted to men) males are evolutionarily insignificant as long as they do not reproduce (and most of them do not). So how is it possible that homosexuality has become so widespread in a world where traits that select against reproductive fitness are usually eliminated from the gene pool? To understand why homosexuality exists, it must first be understood what causes it, and then perhaps it can be determined why this behavior is still displayed. This paper will first examine evidence for the cause of homosexuality and then provide explanations as to how the behavior still exists.
Evidence: The Brain

The easiest way to determine if homosexuality is innate or environmentally caused is to examine the anatomy of straight and gay people. The structure of the brain appears to support the argument that homosexuality is not influenced by the environment, but rather by genetic or hereditary factors. In a study by D.F. Swaab (1985) the hypothalamuses of both homosexual and heterosexual men were compared. Amongst other things, the hypothalamus is the control center for sexual function and drive. Part of the hypothalamus, called the suprachiasmatic nucleus (SCN) was the main area of focus in this study. While a specific function has not yet been attributed to this part of the hypothalamus, it is known that it does control circadian rhythms and it is in the region that is associated with sexual function. The study showed that the suprachiasmatic nucleus in homosexuals is nearly twice as large as that in heterosexuals. In addition to the suprachiasmatic nucleus, the anterior commissure of the brain also has noticeable differences between homosexuals and heterosexuals. The anterior commissure, a large bundle of nerves that connects the cerebral hemispheres, was found to be 18% bigger in homosexual men than heterosexual females, and 34% larger than heterosexual men (Allen and Gorski, 1992).

Does this evidence support the conclusion that homosexuality is innate? That is one possible answer that could be drawn from this data. But there are two other possible scenarios. First, it is plausible that early environmental factors, such as those in utero or very early in infantile development, could adversely affect sexual growth. The other possibility is that homosexuality could be the cause of these anatomical differences. To clarify, think of musculature. If a person is inactive and spends little time exercising, his muscles are likely to degrade, and if he exercises a lot, he will bulk up. The same may hold true with the physiology associated with homosexuality. If a man engages in androphilic behavior his whole life, he may directly cause his anatomy to change. By itself, physiological evidence is not enough to prove if homosexuality is either innate or environmental.

Evidence: Genetic

There is strong evidence that there may be a genetic component to homosexuality. It appears as if the cause for homosexuality may lie on the distal arm of the X-chromosome (Camperio-Ciani et al. 2004). This means that homosexuality is inherited maternally. In their study, Camperio-Ciani et al. showed that homosexuals have more gays on their maternal side than paternal side.
In a 1986 study by Eckert et al., homosexual twins, both monozygotic and dizygotic, were compared. Male twins who were separated at birth and were raised together showed a strong level of concordance. Monozygotic twins showed about twice the level of concordance for homosexuality as dizygotic twins (Kirkpatrick, 2000). Female twins, on the other hand, had a very low rate of concordance (Eckert, et al.). This led Eckert et al. to conclude that male homosexuality has a strong genetic factor, while female homosexuality is influenced more either by the environment, or physiological factors, such as body size and the time of menarche (a female’s first menstruation).

According to Gavrilets and Rice (2006), homosexuality is too complex to be explained by simple Mendelian genetics. The quantitative genetic locus has been established at the X-chromosome, as well as in autosomal genes. It appears as if homosexuality extends beyond a single genotypic focus causing a single phenotype.

Evidence: Embryonic Development

One misleading study was conducted by Blanchard and Bogaert (1996). It showed that men are more likely to be homosexuals if they have older brothers. Although this appears to be an environmental factor, it is not. The younger brother was only gay if he was from the same mother. The youngest amongst step-brothers did not have the tendency to be a homosexual as with blood-related brothers. In addition, the brothers did not necessarily have to be raised together. Just the mere fact that a child had older brothers results in homosexuality. Bogaert claims that having older brothers does not automatically make someone gay; rather it raises the percent chance from about three to five percent. Bogaert hypothesized that there may be some sort of prenatal occurrence that causes the homosexuality, perhaps due to “maternal immune response to succeeding male fetuses.”

Camperio-Ciani et al. (2004) discuss the maternal immune reaction in more detail. They believe that the immune system of mothers delivering later children accounts for about 21% of all male homosexuality. If having male children causes some sort of physiological alteration in the uterus of a mother, then homosexuality is clearly caused by natural, non-environmental factors.
Support of Environmental Factors

There appears to be a limited amount of evidence that supports male homosexuality being caused by environmental factors (for men). Most of the proponents of environmental causes seem to come from religious backgrounds, perhaps due to the fact that many pious zealots believe that man was created in God’s image, and therefore could not be gay unless tainted by his surroundings. In a speech given in December, 2008, Pope Benedict XVI said, “The tropical forests do deserve our protection. But man, as a creature, does not deserve any less. What’s needed is something like a ‘human ecology,’ understood in the right sense. It’s not simply an outdated metaphysics if the Church speaks of the nature of the human person as man and woman, and asks that this order of creation be respected.” While the Pope is no authority on behavioral genetics or the science behind homosexuality, he does speak for the beliefs of the Church. There are a lot of people who believe God created man, and therefore they refuse to believe that man could be created gay. But this is no legitimate argument. There is no scientific foundation. While it is very plausible to say that environmental factors cause homosexuality, the evidence points in the other direction.

Conclusion for Cause of Homosexuality

Homosexuality appears to be strictly inherited. There are just too many instances of children being raised in strict Catholic, homophobic families and ending up being homosexuals to assume it is anything other than genetics. In addition, the physiological and experimental evidence all scream heredity as well. The environment cannot explain why there was such a high rate of androphilic concordance amongst monozygotic twins. It appears as if sexual preference is more like eye color: a person has an established eye color that does not change (for the most part). The color can be masked (contacts), or even altered (surgery), but the genetic blueprints will always encode for that color. Homosexuality appears to be an observable phenotype, caused by some unknown genotype or natural expression.

From Evidence to Explanations

Homosexuality has existed for a very long time in many different cultures (Kirkpatrick, 2000). It was exhibited everywhere from the Melanesians to the Mpondo miners in South Africa to many Greek philosophers, such as Socrates
and Aristophanes. To understand how homosexuality has remained in the
gene pool in such different locations throughout time, a common thread must
be found. The above sections showed that it is more likely than not that homo-
sexuality is innate. Now, factors that could cause this natural behavior must
be identified. No one is quite sure exactly how homosexuality and natural
selections fit together, but there are many working theories.

Explanation: Special Advantage

One means through which polymorphisms are maintained is by special ad-
vantages that can be seen when searched for more closely. For instance, traits
that would appear to be deleterious, such as sickle-cell anemia, continue
to prosper because being a heterozygote results in a higher level of fitness.
Gavrilets and Rice (2006) suggest that there may be underlying advantages
for homosexuals that have allowed them to remain prevalent in the human
gene pool. Kirkpatrick (2000) identifies homosexuals as having certain advan-
tages such as being able to form and maintain strong same-sex bonds. These
bonds result in cooperative aid and defense, ultimately leading to a higher
level of survival fitness. Although homosexuals have a very low reproductive
fitness, if their survival fitness is high, this may account for their ability to
remain in the gene pool.

Explanation: Kin Selection

It is possible that the relatives of homosexuals encourage them to forgo re-
production in order to help rear offspring (Bobrow and Bailey, 2001). This
is possible because the low costs that gay men incur by not reproducing are
often made up for by the benefits to their kin (Weinrich 1976). What do the
non-reproducers have to benefit from this? Bobrow and Bailey claim that the
homosexuals who aided in child rearing benefitted by being given high social
status positions in primitive society. They were often very rich, and took on
roles such as shamans or priests. This theory appears to work off the assump-
tion that homosexuality is caused by environmental factors, which appears
to be false. However, kin selection can be looked at from an innate perspec-
tive. There are many examples in nature of animals defending their genes in
their relatives without having necessarily been trained to do so (Ridley, 1996).
Just as worker bees are born with the purpose of serving the hive without
reproducing, homosexual men may fill a similar role.
Explanation: Boosting of Female Fertility

A very promising theory is that the same genetic influence that causes homosexuality in men causes increased fertility for women (Camperio-Ciani et al., 2004). The above evidence for homosexuality being maternally transmitted fits perfectly with this hypothesis. In their study, Camperio-Ciani et al. found that the mothers of gay men had more children than those of straight men. Mothers of gay men had 2.7 babies on average, as compared to 2.3 for the mothers of straight men. This hypothesis is a perfect answer to the Darwinian paradox: although homosexuality is a reproductive dead-end, the behavior continues to be passed on because of the benefits in women. Although this homosexuality genotype in men and women may be similar, the phenotype is what makes all the difference. The phenotype in men halts reproduction while it is boosted in women.

Explanation: Maternal Immune System

The maternal immune system, as discussed earlier, is a line of evidence for innate homosexuality, but it is also an explanation as to how androphilic men have survived the trials of natural selection. If homosexuality is not caused by genetics, but rather some sort of physiological fallacy in the womb, then it is logical how androphilia in men has lasted so long. Hyperactive maternal immune systems cannot be selected against, and therefore the factors that lead to homosexual behavior will continue to persist.

Discussion

Just because it is not currently understood, homosexuality is not incomprehensible. There have been many behaviors, especially in the field of reproduction, that have made no sense to evolutionary biologists until an answer was found. While androphilic men may be causing a Darwinian quandary right now, a solid answer will undoubtedly be uncovered one day. As it is currently, there are many firm working theories, all of which work off the assumption that homosexuality is not environmental, but rather an innately caused behavior. It is quite possible that androphilic men serve some sort of purpose to society, similar to worker bees. Are we unable to identify this purpose, or has the behavior that homosexuality originally evolved to serve disappeared? Perhaps homosexuality in primitive humans or even primates had a function that is now obsolete. One example is the rearing of kin. It does not appear
as if homosexuals are created for the purpose of aiding the family. But who
knows, maybe this niche existed for the ancestors of modern man. This is sim-
ilar to vestigial organs, such as the femur and pelvis in whales. Those bones
served a purpose for the whales’ ancestors, but they are not functional now.
Child rearing by homosexuals may have existed somewhere in the human
evolutionary lineage, but it clearly does not exist today.

It seems more likely that homosexuality is a genetic byproduct than an obso-
lete behavior. Carriers of sickle-cell anemia may be lucky in certain parts of
Malaria-ridden Africa, but where Malaria is not present, they drew the short
end of the straw. This holds true to homosexuals as well. Those androphilics
with two X-chromosomes (women) have a genetic advance, while the coun-
terparts who received the same X and a Y (men) are innocent victims. Both
these men and women have the same encoding genetic locus, but the expres-
sion is different in males and females. This was likely selected for because
of the higher fertility in women being more of a benefit to a population than
the negatives of homosexuality. It is a fair trade off—more fertile women for
“infertile” men. Why hasn’t sickle-cell anemia been eliminated from the gene
pool? Because it has enough benefits for certain people so as to insure its
persistence. The same line of reasoning applies to homosexuality.

In a world where natural selection eliminates the weaker, less fit individuals,
where does homosexuality belong? Homosexuality cannot be explained by
simple Darwinian evolution or Mendelian genetics. Rather, it must be looked
at in a more complex, eclectic way. Ever since Darwin first published the
Origin of Species, critics have found holes, gaps and dead-ends in the theory
of natural selection. But an explanation that fits with Darwin’s theories is
always found. Whether it is a case of a polymorphism being maintained in the
population via underlying advantages, altruistic kin selection or a particular
physiological alteration, there is a good reason to explain homosexuality.

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York and is looking to possibly go to law school after college.
References


As young children, quite a few of us enjoyed watching Disney’s *Aladdin*, which portrayed a love story between Aladdin, a golden-hearted street urchin, and Jasmine, the beautiful princess of Agrabah. But watching this movie as a young adult, it is difficult not to question the plot of the film: does it not seem unrealistic that Princess Jasmine, faced with a seemingly endless array of rich potential suitors, chooses to spend the rest of her life with a poor thief whose only companion is a talking monkey? Taken at face value, her choice does not seem to hold much logic. But human mate choice is a very complex and multifaceted science, with many conscious and subconscious elements. Although mate choice mechanisms have profoundly influenced the course of our evolution, researchers have only recently begun to thoroughly investigate this subject in humans. Yet initial studies have already yielded fascinating results.

There are roughly seven billion people in the world, but we only feel compelled to initiate romantic relationships with certain select companions. What makes us attracted and/or attractive to some people but not to others? Moreover, how much of this choice is within conscious control? It is no secret that physical appearance, status and personality play significant roles in mate assessment, but millions of years of genetic and evolutionary forces have programmed us to assess potential mates subconsciously on a chemical level, as well. MHC (major-histocompatibility complex) and pheromones send subliminal indications of sexual fitness that are picked up through olfactory receptors of potential partners. And somehow, our bodies and minds make sense of all this physical and chemical information and we choose the best mate available to us with the intentions of fostering the fittest offspring. As Crawford and Krebs (1995) state, “Psychology haunts biology with the spectre of half-sentient mate choice shaping the otherwise blind course of evolution”.
sensible woman, choosing a thief for a husband probably seems to be a poor decision. But from an evolutionary standpoint, Aladdin and Jasmine’s mutual attraction is a perfectly reasonable expression of their underlying genetic compatibility.

The Driving Force: The Gene-ie in the Lamp

It is a law of nature that, whenever individuals live in a group, there will be a struggle for limited and valuable resources such as food, water, territory and mates. As inherently social creatures, humans of one gender will inevitably find themselves competing for mating opportunities with desirable members of the opposite sex. This competition manifests itself in two ways, what Charles Darwin termed intrasexual and interssexual selection (Wedekind et al 1995). Intrasexual selection is competition for mates among the same sex, notably demonstrated in the animal kingdom by the use of heavy horns by rams to drive off competitors. Interssexual selection is the preferential choice of traits by members of the opposite sex; for example, the showy plumage of the male peacock is thought to have evolved because female peacocks deemed it attractive. Darwin’s two methods of selection are closely correlated, as traits which are desired by the opposite sex are likely to be ones that spark competition among same-sex individuals. In fact, the two influence each other to such an extent that it is often difficult to tell which selection is at work.

One thing scientists can be fairly certain of, however, is that genes are the driving force behind this competition and sexual selection. Genetics provide the blueprint for looks, personality, natural scent—in short, all of the raw materials required to attract a partner with whom individuals can procreate. Genes also program humans to be attracted to companions with whom they would produce the most viable offspring. The reason why humans (and other animals) are selective with their mating preferences is because random mating is dumb mating. Undoubtedly, choosiness of mate choice diverts time, energy, and intelligence from other vital activities such as eating, and lowers the chances of sexual selection even operating at all. But raising human children is such an intensive affair (considering the brain is not fully developed when the baby is born) that, in the long-run, it pays to consider mates carefully to ensure the health and longevity of one’s offspring. In this way, “selfish genes” utilize a sort of natural eugenics to propagate themselves as best they can through future generations.
The Mating Game

The Attractor Factors

The fundamental form of sexual selection is exercised through indicators of viability (likelihood of survival) and fertility (likelihood of reproduction). As individuals obviously cannot peer into one another’s genetic codes, the human mind judges vibes of “good genes”/“good parents” from the phenotype of potential mates. Although mate choice is more mutual in humans than in other species, females are considered to be the more choosy of the two sexes. Women have a limited number of eggs and often (or at least, historically) women bear the larger share of parental investment even after gestation, childbirth, and lactation. Thus, it is costly for them to invest this degree of time and energy into heirs with a poor mate choice. Men, on the other hand, have a virtually unlimited supply of sperm, and it is in their best genetic interest to mate with as many women as possible. For males, the most costly mating decision would be to copulate with women of low fertility, particularly in societies such as this one where prolonged courtship is normative and multiple matings are discouraged. As a result of this quality versus quantity dichotomy between the sexes, women are disproportionately drawn to men of status and wealth (indications of “fitness” and competence in today’s world) while men place substantial importance on a woman’s physical appearance (particularly those that allude to good health, youthfulness, and fertility).

This is not to say that women don’t find a male’s physical attractiveness to be important; looks play an important role in assessments of both genders. Indeed, women have been found to prefer testosterone-enhanced features in men—such as high cheekbones, muscles, strong jaws, and deeper voices—to be most attractive, although this preference decreases with the use of birth control (Wedekind et al 1995). But the evolutionary and ontogenetic explanation as to why looks are especially important to men as they reach puberty is that they serve as the best indicator of a woman’s fertility. Studies have found that men tend to be drawn to women with more neotenous (childlike) faces with full lips, diminutive noses, and large eyes (Lilienfeld et al 1997). Eyes are particularly important in flirtation: women all over the world utilize coy glances when soliciting attention from mates, characterized by smiling, lifting eyebrows to look at the desired male, and then dropping the gaze (Suman 2009). Behavioral scientists provide the functional explanation that this is an evolutionary test of commitment judging the interest and persistence of a possible partner. Men who are serious about pursuing a woman are more likely to stick around and help with child-rearing than men who aren’t willing to put forth much effort in the initial stages of a relationship. This promise-withdraw of coyness also sends a subliminal message of “See how hard I am to win?”, elevating the social standing and desirability of the flirtatious mate in question. In another adaptive mechanism, men are very attracted to
women with a waist-to-hip ratio of .7, which indicates both non-pregnancy and a healthy level of body fat (Crawford and Krebs 1995). But these are not the only curves that men notice. Unlike in other animals, the mammary glands of human females remain constantly enlarged after puberty, which may be an evolutionary trick hiding true menstrual cycles that enables women to solicit male attention even when not at their most fertile (Crawford and Krebs 1995). Bilateral symmetry is considered desirable among both sexes, the ultimate explanation given that it demonstrates freedom from harmful mutations and diseases that could have hindered development. Going back to our cartoon couple, Aladdin was surely beguiled by Jasmine’s large eyes, full lips, and narrow waist and she was likely enticed by his symmetrical features, strong jawline and testosterone-built muscles.

In addition to looks, money and social status are also important attraction factors, particularly among women. The majority of women are drawn to men who will be able to provide financial and social support and protection for them and their children. For human predecessors, this meant females were attracted to territory-holding males who could fight off predators. In contemporary society, this fitness is better demonstrated through a man’s success on the economic ladder, because a man’s wealth can contribute greatly to parental investment. Thus it comes as no surprise that, in studies conducted by David Buss on commonly used flirtation mechanisms, one of the most repeated moves by men to impress the ladies was to mention their current or impending financial success. Buss also noted that, in blind date studies, male subjects were more likely than female subjects to flaunt material possessions such as watches. Taken in this context, it comes as no surprise that Aladdin’s first wish to the genie was to make him a rich prince so he could have a legitimate shot at competing for Jasmine’s affection. But luckily for him, Jasmine possessed so much of her own wealth that finances were not a significant factor in her particular mate criteria.

Looks and social/financial status are (perhaps unfortunately) two of the main traits sought for in potential mates. But there are other psychological components to building long-term intimate connections with significant others that are less shallow and superficial. The adaptive explanation for the role of psychological compatibility is that, when men and women are more or less confined to a single partner, well-suited personalities improve the state of relationships and their ensuing reproductive success. Similarity between a man and a woman in respect to values and attitudes is important in solidifying bonds because it validates individual beliefs and allows the partners to better understand one another (Suman 2009). Aladdin and Jasmine both felt trapped in their lives, albeit for different reasons, but it was enough to establish a common bond which reinforced the initial physical attraction. However, too much similarity can be boring, meaning complementary differences are essential.
Aladdin was certainly intrigued by the lavish life of a princess, speculating on what it must be like to have servants and valets, and Jasmine was excited by the unpredictable life of a street rat (Aladdin 1992). Reciprocity of attention and conversational disclosure also strengthen rapport and intimacy, further cementing a bond between romantic partners. It’s flattering for an individual to be liked and trusted with secrets, and the corresponding increase in self-esteem is one contributor to perpetuating a lasting relationship (Suman 2009). Competency is yet another factor in attraction. Skillful, capable and clever people are handy to have around (as long as they aren’t so competent that they make tentative mates feel inadequate) at all times, both in the present and in the past. Aladdin may have been poor, but he made up for this drawback with impressive resourcefulness and an uncanny knack of slipping away from palace guards. In fact, Jasmine may have been more awed by Aladdin’s street smarts than by the wealthiness of her princely suitors, because Aladdin demonstrated that he could provide for her despite being born into poverty. Jasmine and Aladdin were drawn to each other because they were genetically compatible both in terms of personality and physical fitness. The strong bonds of their physical/personality attraction likely led to a desire to consummate their relationship many times over, and there is a very strong chance their children would be healthy enough to survive into adulthood and pass on the “selfish genes” of their parents.

From Hominid to Man:
A Phylogenetic Speculation of Attractor Factors

And now, for a brief evolutionary journey during which the author will attempt to fill in transitional blanks from apelike hominid to the human we recognize today. Long before Aladdin and Jasmine, the animal-like ancestors of humans were probably living on African savannah in compact and mobile hunter-gatherer groups. Crawford and Krebs (1995) theorize that, as with most primates observed today, males hovered on the periphery of groups dominated by matrilines (female kin groups). These males were likely drawn to attractive, mature females of high social status who had already demonstrated their fertility by bearing children. As hunter-gatherers transitioned into a more sedentary and permanent agricultural lifestyle, the emphasis on mate selection became one of long-term commitment, reducing the social mobility of mate choice. The institution of marriage further overturned primal mate preference for mature females by pushing men to compete for young, unmarried, nulliparous (lacking offspring) women of proven fertility, explaining why men are now attracted to youthful features. Thus, in the six million years since hominids diverged from primates, Crawford and Krebs
(1995) believe that men developed a uniquely human set of attraction qualifications that have had a profound impact in the way the minds of male human beings have since developed.

Two of the main characteristics distinguishing man from his primate relatives are comparative lack of facial hair and a substantially larger brain. Crawford and Krebs (1995) speculate the human face became less hairy and more expressive over time as a result of mate selection, because facial expressions—particularly with the eyes, as mentioned above—are key in indicating feelings throughout the courtship cycle from flirtation to copulation. Given how complicated the culture of human social relationships is, more demonstrative facial expressions gave human ancestors an advantage when attempting to solicit mates by allowing them to better “read” into potential partners. They propose that the mysterious case of encephalization human predecessors experienced that tripled brain size over the past two million years is also related to the mating game. Consider: over three million years ago, human forebears with brains only slightly larger than that of a chimpanzee’s were already successful, tool-making, bipedal hunter-gatherers. Why the dramatic increase in brain size? And why did this encephalization rate stop about 100,000 years ago, long before the Neolithic art and technology revolutions that occurred 40,000 years ago (Crawford and Krebs 1995)? Scientists will never know for sure, but Crawford and Krebs (1995) put forth a plausible theory. They suggest nature selected for larger brain size for three reasons: a.) the burgeoning material culture of hominids that was itself evolving demanded greater skill to utilize (more sophisticated tools, etc.); b.) it allowed human progenitors to “predict and manipulate each other’s behavior, leading to a social intelligence arms race between mind reading and deception”; and c.) male and female hominids were simply impressed by—and attracted to—intelligence. Unfortunately, at this time Crawford’s and Krebs’ novel speculations cannot be taken for anything more than just that—speculation. There is not enough information in the fossil record to provide detailed accounts of human social evolution and the role it played in physical evolution. Yet their suggestions certainly provide some nourishing food for thought that may explain why humans have evolved such different mate preferences from our closest evolutionary relatives.

“They Have Chemistry Together”

A final proximate explanation of the attraction puzzle lies in subliminal chemical cues of genetic compatibility. In a study performed by Wedekind et al (1995), several hundred male and female students were typed for their distinctive major-histocompatibility complex. MHC contributes to immunity against pathogens by binding short-self or foreign peptides and presenting them to
T-lymphocytes, and therefore play an invaluable role in the parasite-host arms race key in human survival (Wedekind et al 1995). Each male subject was instructed to wear a cotton T-shirt in a neutral-scent environment for two nights. Females were then instructed to smell the T-shirts and rate the natural male odors in terms of attractiveness. Women gave higher ratings to shirts worn by men with differing MHC than their own, with the exception of women on birth control, who preferred the scent of men with an MHC identical to their own. Wedekind believes this phenomenon occurs because steroids naturally released by pregnant women serve as chemical directions to prefer their own kin over those who are not as closely related, a kind reminder from Mother Nature that new moms should tend to their family rather than looking for mates. Interestingly, odors of MHC-dissimilar men tended to remind women more of their former and current mates than odors of MHC-similar men. Even more interestingly, couples with similar MHC have a substantially more difficult time with pregnancy and spontaneous abortions than control couples with dissimilar MHC. What seems to have evolved as an evolutionary safeguard against inbreeding (and resulting “unfit” progeny susceptible to disease) continues to play a significant role in mate choice to this day.

Along the same lines as MHC are pheromones, although many of the (few) existing studies of the effects of human pheromones currently remain unsubstantiated. But in a promising study conducted by Cromwell et al (2004), a strong correlation was discovered between men’s ratings of the female pheromone termed “FP” and more feminine face shapes. The same was observed with women in terms of the male pheromone “MP2” and corresponding masculinity in the face shapes of male subjects. Clearly, there is statistically significant data in terms of complementary hormonal sex differences between men and women, but it is unwise to speculate too far into the matter without additional studies and observations.

A Diamond in the Rough

Mate choice is a very complicated matter, particularly in human society. Yet despite the advanced state of human culture, men and women still operate on the same primal instincts that successfully guided human ancestors in selecting potential mates. These instinctual cues have been embedded in human DNA over millions of years and will likely remain so, leaving “selfish genes” free to direct human minds in picking the most compatible mates that they possibly can. Aladdin and Jasmine’s fairy-tale romance is no exception to this rule; in fact, it is a perfect demonstration. It is no wonder that Aladdin was attracted to the young and sexy Princess Jasmine, who possessed fertility, feminine charms, wealth, health, witty intelligence and—to seal the deal—a
personality which complemented his own. But what did the Princess see in a
poor thief that made her reject all of her other suitors? For starters, Aladdin
was pretty hot. That masculine jawline, adept handling of the pole vault, and
ability to survive by his wits (and provide for his pet monkey) despite limited
financial resources only added to the appeal of his personality. Maybe she
also found Aladdin’s natural scent to be wildly desirable. In any case, Jas-
mine was innately attracted to Aladdin through a combination of conscious
and subconscious cues alluding to his fertility and their overall compatibility.
By choosing Aladdin, Jasmine got it all–she found her veritable “diamond in
the rough”.

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time, of which there is little, she enjoys painting, shopping, going on clan-
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The Mating Game
Laura Watson

References


Fight Love: Masculinity, Mate Choice, and Soap

Graham Unterberger

Mischief. Mayhem. Soap. The deceptively simple tagline for the disturbingly gory cult classic Fight Club hardly captures the essence of this bloody tale. In simplest form, a man exhibiting two completely contrasting personalities rebels against his cookie-cutter life of single-serving friends by embracing poverty, pounding on his friends, selling soap, and crafting an anarchist following, all while establishing a relationship with a suicidal, self-help group-crashing, meals-on-wheels stealing girl. Easy enough to follow right? No? Lets try that again.

Upset with the permeating monotony of his feeble existence, Jack battles his incessant insomnia by attending various support groups. Inundated with the sufferers of grotesque diseases such as brain parasites, Jack embraces their detachment from the world. Suddenly he can let go, despite the fact that he isn’t afflicted with any such disease. Submissive at work, Jack returns home to his Ikea-catalogue furnished concrete shoebox every night and slowly senses the life drain out of him. Rudely interrupting his waning existence, another “faker” attends his Wednesday testicular cancer support group. Marla Singer demolishes his tiny sliver of happiness. Feeling exposed in front of this new liar, Jack loses his grip on reality and develops the ultra-masculine second personality, Tyler Durden.

Mr. Durden represents the idyllic man that Jack longs to become: free from the constraints of white-collar society, independent, better looking, creative, and most importantly manlier. Exhibiting complete self-interest, Tyler incorporates his human host into an underground brawl fest aptly named Fight Club, a place where the primal violence of men manifest as cracked skulls.
and seeping wounds. Jack views Tyler with utter adoration, even if this god exists only in his imagination, and eagerly abandons his current reality to live a life free of boredom and subservience yet full of violence and poverty. So why change now? Why the immediate need to desert a steady and secure job, an economically prosperous future, an utterly normal life? The answer lies in both masculinity and Marla.

From his initial arrival, Tyler harps about the prevailing femininity in the present culture attributing to “a generation of men raised by women” (Palahniuk 1996). One quickly learns that both Jack and Tyler resent their fathers for ditching their mothers, and consequently gained all social intelligence from their female parent. Lacking any semblance of a father figure, Jack naturally lost many male teachings and therefore reached adulthood harboring a more feminine self-concept. Not surprisingly, children missing a father at early ages experience more intense feelings of loneliness, depression, and often acquire a more ambiguous sense of their masculine identity (Biller and Bahm 1971). Similarly, father-absent boys display a deficiency in interpersonal relationships and weaker self-concepts. Although maternal insight and behavior can counteract the intensity of these damaging effects, this influence is precisely the thing Tyler (meaning Jack subconsciously) wholeheartedly rejects as a detrimental instrument. With knowledge regarding the internal turmoil tormenting Jack, his fabrication of an ultra-macho Tyler as compensation seems strangely validated.

Even with this vindication, one fails to easily accept a sudden and welcome embrace of a split personality as a normal mechanism to cope with the “feminine side”. Perhaps a foray into economic theory might shed some light on the subject. The idea of hyperbolic discounting claims that humans discount the future hyperbolically, or in English, that we behave impatiently today but prefer/plan to act patiently in the future (McClure 2004). For instance, pretend that you have the choice between five dollars in thirty days, or ten dollars in thirty-one days? Which option would you choose? If you think like me, and most other broke college students, you would double your money and wait the extra day right? Now, imagine that you can get five dollars today, or twiddle your thumbs until tomorrow and get ten. Again, you still double the thickness of your wallet, yet many people now take the initial five dollars. What accounts for this sudden, and seemingly irrational choice? Economist David Laibson explains that people become more sensitive to a given time delay if it occurs closer to the present than if it occurs farther in the future.

So right now you are either re-reading the two scenarios above (if you are please take your time, I’ll wait), or you are thinking “ok this seems credible, but how does this relate to Fight Club?” Consider Jack, crying on the inside because Daddy probably left him for a red convertible and a Barbie doll look
alike, unhappy with his feeble self, and living a life of relative monotony. Sure, his socially acceptable job as a Product Recall Specialist for an anonymous car company pays well and guarantees constant revenue. Yes, eventually he might meet a nice and equally mundane girl at an automobile conference with whom he would settle down and continue his relatively successful life. This pretty picture represents the ten dollars, a superior outcome which requires that extra pinch of patience. Contrastingly, consider the five-dollar option of immediately ditching all responsibility while following your perfectly masculine hero Tyler Durden into the exciting world of bare-knuckle boxing, uncertainty, and illegal mischief. That five dollars looks pretty tempting now isn’t it? Not quite doing it for you? It hasn’t convinced you just yet? Well what if I throw in the added possibility of attracting the mascara caked eye of miss Marla Singer? Ah yes, let’s now illustrate how Marla fits into this testosterone infused puzzle.

Marla, though portrayed throughout the story as morally devoid and strikingly sickly, strikes a chord within Jack that prompts the Tyler facilitated total escape from current reality. Up until this chain-smoking woman’s appearance, Jack remained a sane representation of an utterly generic human grinding through the standard nine to five workweek. Like the jingle of Sportscenter sucks men out from the darkness, something about this female ushers in the appearance of Tyler. Never in Fight Club do we conclude that Jack has had any form of steady contact with the opposite sex, and through the evident charm bestowed on his manifestation Tyler it seems relatively safe to assume that the real Jack displays slim to no sexual mojo. With this sexual revolution, a new reason for the mind division becomes evident.

Does reproduction serves as a justification for split personalities? Well, maybe. For the sake of the argument, Tyler and Jack now should be considered two separate entities competing for the “love” (in this case keep your mind IN the gutter) of Marla, though still remember that Jack creates Tyler fueled by an inherent need to increase his chance of reproductive gain. From an evolutionary standpoint, women traditionally track the quality of the environment and link their sexuality to reproductive opportunities. Males, however, search less for quality environments and more for available females. Essentially, “females track the environment; males track the females” (Thiessen 1994). Potential mothers yearn for favorable situations to rear their young, while the males further their womanizing stereotype by adapting their behavior to maximize their chances with the maximum quantity of potential mates. Initially, Jack detests the idea of associating with Marla, and becomes thoroughly appalled when he discovers the blatant affinity Tyler displays towards her. Jack, however, unknowingly tracks Marla by embodying the alluring persona of the more desirable Tyler.
But what feature of Tyler gives him that James Bond irresistibility? Daniel Craig, Pierce Bronson, and of course Sean Connery would eagerly tell you that it’s all about masculinity. Masculinity serves as an indicator of “good genes”, or genetic superiority desired by female partners. Fueled by testosterone, males with obvious masculine features like muscularity, a broad jaw, and a pronounced brow subtly elicit their superior genetic make-up. Facial masculinity, in particular, indicates heritable immunity to infectious disease, assuming that only those with a strong immune system could withstand the immunosuppressant effects of high levels of circulating testosterone necessary to develop those features (DeBruine 2006). Though Tyler and Jack truly inhabit the same body, both the novel and the film Fight Club explicitly comment on the noticeable physical changes associated with Jack submitting to Tyler. Referring to the film, even the most heterosexual man could easily acknowledge the difference in masculinity and overall attractiveness between a defined and chiseled Brad Pitt (Tyler) and the more soft and understated Edward Norton (Jack).

Women such as Marla tend to seek mates in two discrete categories; those who display good genes, and those who will become good fathers. The former comes with the promise of offspring with better overall fitness, while the latter offers security of time and energy invested in child rearing by the male (Gangestad and Simpson 2000). Regarding our male competitors and Marla, having met only fleetingly, it seems safe to assume that both parties only seek a short-term liaison. Gangestand and Simpson state that men with features signaling genetic benefits to offspring should be preferred by women as short-term mates, so Tyler becomes the obvious winner here. Buttressing the earlier claim, women place greater emphasis on men’s physical attractiveness and physical prowess when evaluating short-term relationships (Buss and Schmitt 1993). Quite ingeniously, Jack subconsciously utilizes the pronounced masculinity of his imaginary friend Tyler to play on the short-term desires of females.

Various other interesting aspects of Tyler’s personality, not exclusively his masculinity, increase his appeal to Marla. Fight Club, as one might venture to guess, revolves around the brutal battleground of Fight Club. In this arena men blast each other with clenched fists and embrace the opportunity to showcase their hidden bravery. Tyler dominates this realm, serving as its mythic creator and undisputed arbiter. Risk-taking and bravery, characteristics showcased raw through Fight Club, act as honest cues for good genes and influence short-term female preferences. Men dabbling in risky pursuits signal to females the ability to offer protection or the capacity to secure valuable resources, both necessary elements that females seek. (Kelly and Dunbar 2001). But with excess bravery comes jagged consequences, visible reminders of past wounds. “It’s all good!” says the female, according to a study conducted
by Robert P. Burris. Posttraumatic scars acquired through combat or other heroic behaviors may also advertise valued traits. True, the heroic nature of Fight Club is open to debate, and yes an oozing second mouth residing on a Fight Club member’s cheek most likely sends women away prematurely. But regardless, posttraumatic scars may signal a risk-taking personality or above average masculinity (Burris 2009). Not only does Tyler project his favorable genetics through competition in Fight Club, but he retains and heightens his reputation by proudly wearing scars incurred through the scrapping. If these badges of courage indicate “above average masculinity”, they only further elevate the short-term desirability of Jack’s alter ego.

As the narrative progresses, Marla begins to discern the differences between the two personalities. Growing weary with the temporary affair with self-centered Tyler, she begins to seek a partner in the more reserved Jack. Vaguely aware of the explicit difference between the two men, Marla engages in a metaphoric version of the dual-mating strategy. Theoretically, women could achieve material and heritable benefits (good genes) through one partner, while simultaneously securing energy and time investment through another. This scenario allows the mother to rope in positives from both short-term and long-term relationships, securing favorable genes and a nurturing father to protect the young (Pillsworth and Haselton 2006). Such a strategy riddled with controversy, and not to mention jealousy, hardly seems applicable in modern society. Yet in the fictional actuality of Fight Club, a reality where an identity-confused male convinces grown men to embrace a savage cult of brutality, such a strategy doesn’t seem so farfetched. Juggling between two mates confers many obvious difficulties, thus the dual-mating strategy often fails to play a prominent role in many species. Accordingly, Ms. Singer slowly recoils from the ever-increasing masculine Tyler, and begins to fall in with Jack.

At this point in the journey, Jack abruptly grasps the severity of the competing voices in his head, and starts to consciously distance himself from the monster he created. Concurrently, Jack witnesses the destruction organized through his hands at the bidding of Tyler, and finally comprehends the gravity of his situation. Definitively in control of his own body, Jack effectively sheds his masculine counterpart. The revelation also causes a change in his view towards Marla; he banishes his repulsion and accepts his inner attraction. Likewise, Marla senses Jack’s recent metamorphosis and shifts her lust for an ephemeral rendezvous to a yearning for a lasting relationship.

Definitively in control of his own body, Jack effectively sheds his masculine counterpart. Marla chooses Jack over Tyler, proving that women prefer males who are keener to take care of them and their offspring as long-term partners. Seeing as Tyler has no problem targeting violence towards Marla to undermine Jack, Tyler fails in the loving spouse category. Generally, women seek
dependability, education, social status, and financial resources in a long-term mate (Shakleford 2005). From the viewpoint of Marla, Jack offers stability. Pre-Tyler, Marla saw Jack had secured tangible economic income and earned decent societal standing in his previous job. Although a history of mental illness might unravel the deal, the true Jack represents the first glimmer of durability in Marla’s previously hectic survival. Likewise, without the added testosterone associated with Tyler’s personality, Jack adopts a less manly appearance. In the context of long-term mating, women generally prefer “feminine” male faces, probably because of their association with positive personality traits such as cooperation, loyalty, kindness, and willingness to provide parental care (Bressen and Stranieri 2008). While dating the bad boy might have had its perks, Marla chooses good parenting over good genes.

Selection pressures have forced various genetic modifications, modifications that did not override, but merely served as functional add-ons. Economist George Loewenstien illuminates this theory through conflicts within the brain. The primitive yet intact “reptilian brain” regulates instinctive survival responses, while the later evolved “mammalian brain” manages higher functions. Unable to completely re-program the primal brain, natural selection simply covered it with a more powerful substitute. Presently, modern humans face a distortion in information processing, a conflict within the mind between animal and civilized actions. Jack displays a similar inner quarrel, a clash between early human masculinity and the contemporary notion of the invested male. Human evolution tracks males moving from a harem holding society like gorillas, to a more monogamous and invested model. This dissonance exhibits itself in Jack as two warring personalities, steering their host in contrasting directions. Perhaps natural selection, by forging new elements without deleting the older components, fabricates hidden schisms within man for the benefit of boosting fitness.

Chuck Palahniuk’s *Fight Club* offers a disturbing tale of one man’s journey through two separate, and ultimately conflicting paths. Despite knowledge that Tyler Durden and Jack inhabit the same body, the definite differences in their mental and physical nature allow one to pit their mating advantages against each other. Primarily disgusted with his current life route, Jack conjures up Tyler to reveal his yearning for masculinity and any semblance of a relationship. Through Tyler, short-term relationship attractions between humans became evident. Eventually, however, the female opts for stability and protection garnered from a long-term relationship in Jack, a choice mirrored by the majority of our species. *Fight Club*, apart from its enthralling properties and epic ending twist, offers up varying instances of social commentary. A fight between Tyler and Jack could just represent man’s need for a good pounding, or it could educate about mate choice and human evolution. Fancy that.
A unique species of bipedal mammal often viewed lounging in its natural coastal habitat. Rarely caught more than 200 feet from the sand, the Graham seems to enjoy all things ocean. Often mistaken for a wayward seal, Graham seems more at ease sliding between waves than anywhere else.

References


Orgasm: Evolutionary History, Motivations, and Repercussions

Kelsey Kaszas

The gasps of burning hot breath upon the shoulder, cold sweat incinerating the flesh, carnal desire at its hungriest. The final product, a baby. The elements of love, pleasure and orgasm in sexual reproduction greatly complicate any scientific analysis of procreation through an evolutionary lens. There is undoubtedly an important relationship between pleasure and reproduction, or pleasure would not exist. However, societal institutions have incarcerated modern man, restricting nature’s primitive floor plan. In the light of evolution, what is the role of orgasm and what behaviors have manifested from it? This in depth examination of the power and mystery behind the male and female orgasm examines both the physiological and psychological background of this anatomical phenomenon, using analysis of current films, behavioral studies and biological research.

Sixth grade sexual education teaches students that the goal of intercourse is reproduction. However after hundreds of sexual interactions within the course of one women’s lifetime, most women only rear one to four children. So what were all the other times for? If intercourse were just for reproduction, then humans would not have invented so many types of contraceptives in order to enable pleasure without the mess. And yet the roots of pleasure remain mysterious to humans.
In the movie *He’s Just Not That Into You*, the writers delve into the mysteries of lust and desire. One of the story lines in the film, a scandalous love triangle, is the perfect case study for this paper. The character Ben, played by Bradley Cooper, is stuck in a dying sex-deprived marriage with his college sweetheart Janine, portrayed by Jennifer Connelly. Ben is driven to cheat with siren yoga teacher Anna played by the stunning Scarlett Johansson. What are potential reasons for Janine’s loss of sex drive? How and why did Anna fall into the role of “the other woman” and more so why did she think her and Ben’s affair could work? What drove Ben to cheat and risk it all? Perhaps it was desire and temptation, the evolutionary engine of pleasure—orgasm at the root of it all. After addressing the physiology and psychology behind orgasm, this telling fictional love triangle will be revisited.

The scientific definition of orgasm is the point of climax during intercourse accompanied by involuntary muscle contractions in the lower pelvic region, sexual organs and anus and a sudden release of endorphins causing euphoria. Not under conscious control, orgasm is a reflex of the autonomic nervous system (Roach, 2009). In popular culture, orgasm has been described as a fiery, uncontrolled explosion and an out of body experience. It is common knowledge that women are capable of multiple orgasms, while men usually experience one orgasm accompanied by ejaculation. But how does it work?

In men, penile stimulation causes surges of impulses, sent back and forth through the nervous system, between the brain and the sensory nerve endings within the genitals. The pudendal nerve is the main connecting nerve that carries signals to the dense concentration of nerve endings within the head of the penis (Komisaruk et al., 2006). This rapid transaction of impulses gradually causes intensifying contractions within the passageway leading from the scrotum to the penis, eventually leading to the climax: ejaculation. The final rush of ejaculation sends an explosive impulse to the pleasure center in the brain, causing orgasm. The orgasm triggers a release of a gamut of hormones associated with romantic love, attachment and pleasure. The sexual peak is followed by a refractory period in which the male loses erection for anywhere between a few minutes and a few hours.

The female orgasm is a comparable to the male orgasm but with important differences. The female orgasm involves several sensitive regions, the most prominent being the clitoris. The clitoris is composed of erectile tissue, which like a penis, can swell to almost twice its diameter with sexual arousal and stimulation. The head of the penis and the clitoris have an equal amount of nerve endings. Another region associated with the female orgasm is known as the “g-spot” which is located on the anterior (front) of the vaginal wall. There are four stages involved with orgasm. The first is the “excitement” achieved by foreplay, stimulation and several other means. It is then followed
by a heightened state of excitement called a “plateau” characterized by waves of pleasure. The third stage is the orgasm itself, involuntarily triggered after extended stimulation. After the intense burst of debilitating pleasure, the “resolution” occurs. At this final stage, the female returns to the prior state of the “plateau” where she can then choose to continue stimulation for multiple orgasms or stop (Lloyd, 2005). Both male and female orgasms last about 3 to 10 seconds and result in about 3 to 15 contractions within the genital region (Locker, 2005).

Two competing scientific hypotheses attempt to explain how and why the orgasm developed in humans. The adaptationist point of view maintains that the orgasm was an evolutionary adaption in both men and women, serving a directly correlative reproductive purpose. The opposing byproduct hypothesis maintains that while men adapted the orgasm to physiologically relate directly to reproduction, women co-evolved the ability with no other purpose than pleasure. Several studies have been done on each argument; however, the byproduct hypothesis is more widely accepted.

The adaptationist argument contends that the female orgasm has certain attributes which make it more likely that orgasm evolved for purposes of sexual fitness. Adaptationist hypothesis research has found that orgasm could potentially affect paternity by making it more or less likely that one man’s semen will fertilize over another and that vaginal contractions associated with orgasm decrease sperm loss from ‘flow back’. Certain studies have also found that the female orgasm might increase the number of sperm with the potential to fertilize as well as promote longer sperm life (Puts, 2006).

The studies from which these conclusions are drawn are highly questionable. One study (Thornhill et al., 1995) delves into the probability that one male is more likely than another male to induce orgasms based on “genetic quality”. The researchers hypothesized that men with higher “bodily symmetry” are more likely to induce orgasms because they have higher genetic quality. They compared the rate of orgasm in 86 heterosexual couples and found that there was a positive correlation between symmetry and rate of orgasm. This research is problematic because “bodily symmetry” does not really mean much of anything. A perfectly symmetrical man could carry some terrible heritable disease and not show his flaw. It seems obvious that couples with better sexual chemistry will have a higher rate of orgasm. That just comes down to technique.

Elevated levels of the hormone oxytocin, another effect of orgasm, are also induced by both masturbatory and copulatory orgasm. Oxytocin creates uterine contractions which have been observed to change uterine pressure from outward to inward, creating a vacuum-like suction, increasing the transport of seminal fluid toward the female’s eggs, supporting the “upsuck” hypoth-

58
kesis (Blaicher, 1999). The research behind these claims is again questionable. Several studies have been done in regard to the “upsuck” hypothesis, most of which have yielded contradictory conclusions. One study found that females have a higher retention of semen if orgasm occurs one minute prior and up to 45 minutes after the ejaculation (Baker and Bellis, 1993). However, other research has found the opposite to be true. Two studies outfitted a cervical cap full of radio-opaque fluid as well as artificial semen to the cervixes of a select group of women in order to track the movement of the residue by orgasm. Neither study found evidence of “upsuck” in the x-rays (Grafenberg, 1950; Masters and Johnson, 1966). Critics of these studies say that the cervical cap may have interfered with the uptake; however, it is known that the cervix is elevated off of the vaginal wall during orgasm, already creating a path for the seminal fluid (Puts, 2006). If the Baker and Bellis study is true, it would lend evidence to the adaptationist hypothesis, showing that orgasm serves a specific reproductive responsibility. However, if the other two studies are true then it would reinforce the byproduct hypothesis, showing that pleasure is the main function of orgasm.

Professor of Biology at Indiana University and author of The Case of the Female Orgasm: Bias in the Science of Evolution, Elisabeth A. Lloyd points out that evidence for the byproduct hypothesis currently stronger in humans. In animals, however, there is substantial evidence of increased fertility with orgasm. Pig farmers have found up to 6% increase in the amount of offspring produced by using certain manual techniques to induce orgasm (Roach, 2009).

The byproduct hypothesis can be best understood by the example of how the male nipple came about. During the process of fetal development, the male and female fetuses share the same embryological form until about the eighth week. At this point, a release of hormones determines the sexual development of the child. If the hormones are released, the fetus will develop into a male but if there is an absence of the hormones then the fetus will default as female. The male gets nipples as a “byproduct” from having shared its embryological form with the female up until the eighth week turning point (Lloyd, 2005). This correlates with the subject of the orgasm in that the byproduct hypothesis maintains that the female orgasm coevolved with the male orgasm. The clitoris is homologous to the penis in that they originate from the same erectile tissue; the only difference is that once the hormones are introduced, the male diverges from the original path and instead begins to develop a penis. Males evolved the orgasm alongside the ejaculation while the female was left with an organ with the sole purpose of pleasure.

One of the most comical scenes in the film When Harry Met Sally is of Sally faking a highly convincing orgasm in a crowded diner to counter Harry’s macho comment that no women has ever faked one with him. Sally’s little
stunt at the diner is hilarious on the surface but the underlying implications are far reaching. Not all women can achieve orgasm from intercourse. In fact, it is estimated that 11% to 12% of women never have orgasms from intercourse and about 5% to 10% never experience it at all (Lloyd, 2005), so what does this say about the purpose of the orgasm in females? Perhaps, that its only purpose is indeed pleasure.

The most baffling quality of orgasm is perhaps how it has manifested in a multitude of highly peculiar ways in humans. Sexologist Mary Roach interviewed a woman as part of a sex study at Rutgers University who is able to bring herself to orgasm just by thinking about it. Another curious story involves a female being reported brought to orgasm from the act of brushing her teeth. After undergoing numerous tests, such a trial with different toothpaste brands to see if a certain chemical was responsible and being poked in the gums with a toothpick to attempt to find the trigger, the scientists found that it was indeed the entire motion of brushing her teeth bringing her to orgasm. It has also been found that quadriplegics and paraplegics can develop a sensitive area right about the paralyzed region that can trigger orgasm (Roach, 2009). These peculiar occurrences continue to lend support to the idea that female orgasm is a byproduct. If it can manifest in so many different ways, pleasure must be the primary function.

Returning to the introductory case study involving a scandalous love triangle from the film He’s Just Not That Into You allows reanalysis of the possible motivations behind the behavioral aspects of that three ring circus. Ben’s relationship with his college sweetheart Janine is portrayed as the classic “unhappy married man who cheats with superior female” scenario. However, the complexities are riveting. The couple is at the point in their marriage when they should be happiest, buying a new home together and starting a new life. However there is a void, the couple has not had sex in over a year and their satisfaction is dwindling. When Ben runs into the free spirited bombshell yoga instructor/singer hopeful Anna, he falls for her after much resistance, and he falls hard. The lustful couple engages in maddening love making which Ben eventually confesses to his wife. Although it is never verbalized, it seems as though Ben is expecting and perhaps even hoping for his wife to leave him. He does not want to be stuck anymore, using his desire for Anna as an escape. When his wife responds with wanting to “work it out,” he is cowed into staying with her.

The pivotal moment of Ben’s relationships comes in the office scene. Ben works as a talent agent and brings Anna back to his office under the guise of a business transaction. The two quickly turn up the heat as clothing starts flying off when there is a knock. It’s Janine, his wife. Ben’s immediate reaction is to stuff Anna into the closet behind his desk. The closet doors having shutters
so Anna sees every last detail. Janine, blaming herself for Ben’s indiscretions, takes it upon herself to seduce her husband. Ben recognizes her advances and quickly cowers, attempting to hide in his work. Keep in mind this couple has not made love in over a year. Ben finds himself in a huge dilemma. Sleep with his wife, whom he no longer desires but still loves, thereby casting Anna aside and risking losing her, or “manning up” and leaving his wife to be with the woman he truly desires. Ben ends up trying to have his cake and eat it too by sleeping with Janine, alienating the far superior Anna, and in the end losing both of them.

It would appear that pleasure and gratification are the primary motivations for Ben’s infidelities. Orgasm evolved in men to reinforce copulatory behavior. When Ben could not get it within his marriage, he was tempted to go outside of it, lured by the appeal and taboo of the unknown. After the same mundane problems constantly being re-hatched with his wife, he wanted more, he needed more and he found Anna. Anthropologist and sexologist of over thirty years, Dr. Helen Fisher discusses the three different “drives” which have evolved in the brain in regards to mating: the sex drive, romantic love, and attachment. The three drives at times have different contradictory intentions. For instance an orgasm during casual sex results in a spike in the hormone dopemine which can result in romantic love. It is possible to feel deep attachment for one partner while feeling romantic love for another while feeling pure sexual drive for yet another. It’s possible that Anna felt false hope that her and Ben’s affair could work because of the attachment that comes along with sex. Orgasm results in a rush of oxytocin and vasopressin which are the hormones associated with attachment. It appears that the primitive inner workings of cardinal desire are at the root of it all.

The “Big O” controls more behavioral aspects of human nature than meets eye. In both men and, orgasm reinforces sexual behavior. The messy emotions that come bagged with the act dictate so many of decisions which shape relationships. The inner workings of pleasure are mysterious to the human race, but they somehow seem to keep the world going around.

_Kelsey Christine Kaszas_ comes from small beach town Redondo Beach where she grew up dreaming of bigger things. As her lifelong ambition to attend UCLA came true, she has since spent every moment completely enamored with college. Her plans are to major in Global Studies with a minor and Spanish. Before she leaves the walls of UCLA, she hopes to learn to speak Chinese and study abroad in China and Argentina. Her post undergraduate plans are to spend a year traveling the world and then attend law school. This past year she participated in UCLA’s Mock
Trial program, currently ranked 4th in the nation, as a character witness, as well as on the UCLA Ultimate Frisbee team where she had the pleasure of travelling to Colorado and several UC’s to compete. In her free time she enjoys surfing, playing Ultimate, skiing, writing songs on her guitar and jamming on the ukulele.

References


Esmerelda and the Beast: 
An Inquiry into the Mate Choice of Esmeralda from 
The Hunchback of Notre Dame

Priya Lorenz

A generic-looking male walks into a grocery store. He glides nonchalantly up and down the aisles, allowing his gaze to casually drift over the endless stacks of products lining the shelves. His short brown hair and hazel eyes are nothing to write home about and his clothes are less-than impressive. However, from the distance a shuffling of footsteps can be heard and a chorus of high pitched grunts resonates through the aisles; Women. A herd of desperate females come galloping towards him at full speed, hair waving erratically and eyes piercing him with lust. He appears to be nervous. Before he can say ‘sexual selection’ he is tackled by the ruthless band of females and finds himself, tragically, beneath a pile of beautiful women. CUT TO: An overtly masculine voice describes the situation and attributes the extreme attractiveness of the male to AXE Body Spray for Men; “How Dirty Boys Get Clean”.

From an evolutionary perspective, this commercial indicates that the featured male is a prime example of an organism who has been and will continue to be successful in passing on his heritable traits. But is it evolutionarily accurate? Surely the suits at Unilever advertising know what they’re talking about. Do the majority of women really gravitate towards nice-smelling, healthy, masculine, intelligent, creative males? Or is there a slightly improbable but nonetheless plausible chance that females choose depending on personality with no regards to potential reproductive success? To name one
example, singer/songwriter Cheryl Crow had a long-term relationship with Lance Armstrong and he, as most people are aware, was not able to reproduce sexually. However, Lance nor the Axe Body Spray man are the subject of this paper. On the contrary, the male who will be discussed is the Hunchback from Disney’s animated film *The Hunchback of Notre Dame* and more specifically, why Esmeralda was initially attracted to him but ultimately opted for the more socially accepted and generic male.

In a nutshell, the story of Esmeralda and the Hunchback goes as follows: Esmeralda meets Hunchback, feels attracted to him, shows him compassion, Hunchback falls in love with her, they experience a short-term semi-relationship, Esmeralda meets handsome blonde man, she leaves Hunchback, Hunchback returns to a life of solitude, cue end credits. And this is a children’s film. There are surely multiple interpretations of this film and the strange morals it attempts to instill in its prepubescent viewers, but for the purpose of this discussion the reasons for Esmeralda’s mate choice will be examined from an evolutionary standpoint.

For centuries women have been painted as individuals who can be easily duped into commitment given an adequately handsome, intelligent, and sexually-equipped male, but could this be on the verge of a huge paradigm shift? Currently, intelligence and familial approval are the two highest priorities for women when choosing a mate (Prokosch, 12). Maybe Esmeralda was a Disney-animated representation of this shift and her subsequent choice to opt for the safer, more socially accepted male was a realistic illustration of the dilemma many women encounter today in the ‘real’ world.

**Get Smart**

Good looks are nice but they don’t go that far in the bigger picture (this is not merely a matter of opinion, it is scientific fact, of course). Being intelligent is an indication of better access to various vital resources such as, ability to protect one’s family, access to increased social support, and availability of resources from other individuals in the form of reciprocity. According to the data gathered in an experiment by Mark D. Prokosch, M.D., when given a small budget and many male traits to choose from, women will spend the highest percentage of their allotted budget on intelligence. This is a strong indication that, “Man’s intelligence [is] a ‘necessity’ rather than a ‘luxury’ among women’s mate choice criteria” (Prokosch, 12). This also has implications that intelligence is a valid indication of physical fitness. Research suggests that when women are deciding on a mate, characteristics associated with intelligence such as a good sense of humor and creativity are rated as
the most crucial attributes. When asked to list their priorities regarding characteristics in a mate, the majority of women placed creative intelligence above wealth most likely because “creative intelligence may serve partly as a marker of good genetic quality” (12).

Another contributing factor in a woman’s mate choice is the hormones active during certain points in her menstrual cycle. For instance, women who are in the middle of their cycle and are 9% more likely to conceive tend to favor creative intelligence over other characteristics. However, at the beginning of the cycle when there is an approximately 0% chance of getting pregnant, women seem to prioritize other attributes such as physical appearance (12). Another experiment conducted by Prokosch revealed that, “Women’s ratings of intelligence were based on actual intelligence of a man” (15). In this experiment women were asked to rate test scores from a group of men. The results indicated that women found higher test scores most appealing which implies that women favor actual intelligence as opposed to perceived intelligence (15). Sorry boys, wearing thick rimmed glasses and sporting a blazer with attached pocket protector won’t help you here.

Creativity, which is often linked to intelligence, was also a highly favored characteristic. The fact that women favor creativity and higher scores in WAIS tests illustrates that they are looking at intellectual quality as more than a one-dimensional characteristic. In the context of Esmeralda and the Hunchback, this proves quite accurate, at least in the beginning of the relationship. Esmeralda is drawn in by the Hunchback’s intellectual prowess and vulnerable composure. He has a mysterious allure that Esmeralda initially gravitates towards and in the budding first moments of their relationship, she seems to be attracted to his mind and the substance of his character. However, is intelligence an apt means of maintaining a relationship as indicated by a large portion of scientific data? Or is it merely an initial element of sexual selection used to lure in females with promises of witty conversations and an elevated social status? In Esmeralda’s case, the latter seems to prove true.

To Shave or Not to Shave?

Men in the United States spend approximately $19.5 billion per year on razors and facial grooming products (Adams). This is an alarming statistic given the evidence supporting ample facial hair as a significant attractive characteristic to women in the context of sexual selection (Smith, et al.). If the majority of women tend to prefer men with masculine faces, as a substantial amount of evidence concludes, then the Hunchback of Notre Dame should be the most eligible bachelor. Masculine features often include abundant facial hair, deep
voice, and muscular limbs, to name a few. All of these attributes are signifiers of good health and strength which is key in the success of producing healthy offspring. In an experiment involving participants of both genders, results indicated that “Female participants preferred masculinity only in healthy male faces” and that these preferences were “stronger when judging the attractiveness of faces with high apparent health than when judging the attractiveness of faces with low apparent health” (Smith, et al.). This same experiment also found that women’s preferences were stronger when judging masculine male faces than feminine male faces. This carries the implication that “apparent health modulates preferences for exaggerated sex-typical features in opposite-sex faces” (Smith, et al.).

So with all this evidence to reinforce the idea that women prefer manly men, why is the Hunchback, who possesses these typically male qualities, kicked to the curb by the love of his life? If this bears any correlation to relationships in the real world, then could it be fair to say that possibly women’s preferences have evolved through time to favor less-masculine males? In the modern world one’s masculinity does not necessarily offer promises of reproductive success, nor worldly success for that matter. Bill Gates is not an Abercrombie & Fitch model and Einstein was certainly not the Brad Pitt of his time. Men come into this world without consciously choosing the physical body they will inherit but they, as all humans do, work with what they have. A male does not have to be 6 feet tall with rock-hard abs to be selected by a reproductively-competent female, although it can’t hurt his chances. There are multiple additional contributing factors that heavily influence mate choice among women. As previously discussed, intelligence can be a highly influential factor in mate selection but if a male does not graduate Summa Cum Laude he still has plenty of chances to attract members of the opposite gender. Studies have shown that peers and familial pressures on women possess a substantial influence on mate choice.

**Guess Who’s Coming to Dinner**

Women in the United States are more likely to cultivate long-term relationships with individuals who are favored by their circle of friends and respected family members (Zhang, et.al.). Please note that although *The Hunchback of Notre Dame* is set in France, studies conducted in the United States still possess relevance to the dynamics within relationships in France. The ideal, and often illusory, Western relationship is characterized by physically beautiful individuals and a deep, passionate love that permeates each interaction. Zhang (2009) states that, “Fairytale ideals [are] a major theme for U.S. Young adults” (7). A key reason for this is that for the most part Western cultures are...
largely individualistic, whereas the majority of eastern cultures are marked by strong collectivism. 'Individualism' is defined as “the subordination of group goals to individual goals”(5). Collectivism, on the other hand, is described as “the subordination of individual goals to the goals of the collective, and a sense of harmony, interdependence, and concern for others” (5). In cultures with strong individualism, romantic relationships tend be just that; romantic . . . ideally. In individualistic cultures a huge amount of emphasis is placed on the importance of romantic love in long-term relationships whereas in societies that are more collectivistic, romantic love takes a back seat to family-related characteristics. The difference is well illustrated between the United States and China. In China, the majority of individuals decide on their mate in regards to ‘Gaunxi’, their network of connections, as opposed to individual desire.

However, no matter how much chocolate and roses are involved, peer pressure plays a key role in the longevity of the relationship. Individuals, both male and female, strive for validation of their relationship from their respective social networks. They call upon friends, family, and those within their tight-knit web of influence to analyze and approve, or disapprove, of their mate choice (Zhang, 5). This is indeed a helpful inclination because evidence concludes that those within an individual’s social network are more accurate when assessing the longevity of the individuals relationship than the individual herself. In this sense, when a chosen mate has the support of the chooser’s friends and family he is more likely to be involved in a long-term relationship. Could this be one possible reason why humans typically become nervous when meeting their significant other’s family for the first time? Parks and Adelman (cited in “Can I Make My Own Decision?”) concluded that partners in a romantic relationship are less likely to experience uncertainty and break up when there is ample communication between each other’s family and friends. Also, in this same experiment evidence was gathered to suggest that married couples had an easier time adjusting to married life when both sets of parents approved of the union (5).

Interestingly, women are more likely to comply with the opinions held by members of their social networks than men are (Zhang, 14). This could be a potential reason as to why Esmeralda chose the handsome man over the Hunchback. Could it be that her friends and members of French society looked down upon her relationship because the Hunchback was considered a French version of an ‘untouchable’?

In addition, there are differences between men and women regarding which characteristics they prioritize in a potential partner. Men tend to prioritize physical beauty, chastity, and youth, while women place more importance on intelligence, ambition, financial potential, and industriousness in male part-
When the frequency of relationship expectations on the part of young adults living in the United States was assessed, evidence supported the conclusion that Americans tend to favor less concrete characteristics in their partners. That is to say, most of the test subjects expected that their romantic relationship ‘make them a better person’ or ‘make them smile more often’ rather than provide for them financially or produce healthy offspring. When given several choices and being asked to rate which relationship characteristics were most important, male and female test subjects exhibited differing opinions. Females taking part in the experiment preferred their involvement in a romantic relationship to “make them a better person” (10), whereas males prioritized their mate being supportive of them and their personal endeavors.

When members of both genders were asked to rate their expectation that their mate ‘make them happy’, women were found to value it more than men at a 9:3 ratio. However, on the majority of expectations listed men and women rated them the same in importance. For example, both males and females agreed that “make my life more interesting” and “make me a more confident person” (10) were not crucially important qualities in a relationship (rated a 3 on a scale from 1-7, 1 being less important).

Plenty has been discussed regarding males and females involved in relationships however, before a marriage can form there are multiple obstacles that lie in the path to a long-lasting matrimony. In fact, there are 10 solid categories that neatly encapsulate the core obstacles: financial problems, familial or friend disapproval, changes in feelings, differing interests, betrayal, selfishness, lack of support, commitment problems, differing age and backgrounds, and a change of location (Zhang, 13). In Esmeralda and the Hunchback’s case, four of the ten listed obstacles exist. The Hunchback was certainly not financially secure because he did not have a well-paying job and it was never implied in the story if he was paid for his services in the bell tower. Secondly, the townspeople who would be the closest to a ‘family’ that Esmeralda had, did not approve of the Hunchback. Strike two. Thirdly, Esmeralda and the Hunchback had differing interests. The Hunchback lived a life of quiet solitude and did not crave change in his surroundings or lifestyle. Esmeralda, on the other hand, was a wandering gypsy who thrived on the unpredictable fluctuations of her destiny. Lastly, they came from different backgrounds and although no specific age is mentioned for either of them in the film, it is clear that the Hunchback is significantly older. Being raised in differing cultures with specific sets of morals and customs is a difficult aspect of one’s personality to overcome and it is apparent in the story that neither Esmeralda nor the Hunchback have any desire to change their cultural tendencies.

To summarize, women tend to favor intelligence, masculinity, and an ability to provide happiness in a relationship. They want a mate who can woo them with wit, impress them with outward displays of machismo, and provide last-
ing contentment in a relationship. This may sound overtly stereotypical but according to the data and experiments conducted on this topic, the stereotypes ring true in the context of sexual selection. Of course there are mavericks who do not fit within the confines of these definitions but Esmeralda is certainly not one of them. Esmeralda is initially drawn to the Hunchback’s kind, mysterious demeanor and she quickly befriends him. He seems to possess multiple qualities that women would theoretically find appealing such as facial masculinity and intelligence. Unfortunately, his physical deformity (hunched back) causes him to live a solitary existence as a societal outcast. This, more than anything, is the reason why Esmeralda chose the more generic male over him. Her feelings were swayed by French society’s harsh criticisms and although she appears to live a life full of chance and risk, she opts for the safer option; the handsome blonde with a good job and a satisfactorily erect spine.

References


Few of the stories of humans have thrived through time like those of Homer. The ancient Greek’s epics endure like little else, and of them none have endured like his greatest work, the Odyssey. The tale of Odysseus, King of Ithica, is still a nigh-universal cultural touchstone 3000 years after its original conception. It is an enormous story, its massive scope encompassing romance, adventure, religion, history—the full arc of Odysseus’s journey spans twenty years, from the preparations for the long and ill-fated Trojan War to his climactic return to his home ten years after Troy’s fall. But the lasting, fascinating power of the Odyssey owes a great deal to its fundamental framework, the basic structure upon which every fantastic monster, every perilous twist, and every divine intervention is contrived: the Odyssey is a really a story about a man’s journey, against incredible odds and at truly immense cost, to reunite with his wife (and, in tandem, his wife’s incredible decision to remain faithful to him in spite of an absence bridging decades). Without the desperate and inexplicable need to return home, and likewise the faith that makes that home ultimately worth returning to, the epic would be incoherent, meandering between war, disaster, and peril without real purpose. The driving force and the core motivation of this, one of mankind’s most enduring stories, is monogamy.

Homer wisely chooses as the framework of his story something common and perplexing in humanity, the way we mate, the extremes we find ourselves driven to in service of the ideal—to pick a single, lifetime partner—and in
part the phenomenal success of his story can be attributed to how drawn humans are to the exploration of that theme. With our modern understanding of natural selection, a twenty year journey across an ocean promising a dizzying amount of grisly deaths for the sake of a single woman goes beyond the irrational, into the domain of lunacy, and yet we implicitly accept Odysseus’s motivation—likewise, we implicitly admire his wife Penelope’s unflagging faithfulness to her husband even as her celibate refusal to remarry seems to fly in the face of her genetic imperative to see her genes survive in her offspring. Homer, singing his epic poem thousands of years ago, based his story on a perplexing incongruity. Today, evolutionary biologists seek to explore that incongruity in intricate detail with methods and theories that Homer could not have begun to fathom.

Why are we, by and large, across the vast diversity of human cultures, consistently monogamous? What has caused selection to favor in a choice few animal species a system of mating that seems upon first analysis to be so problematic, so costly, with such incredibly high stakes for both partners? Why do we so frequently fail to live up to the example of Odysseus and Penelope—why do we cheat, divorce, abandon, deceive? A developing array of current, convincing research suggests that an answer to the mystery of our strange, flawed, fascinating system of mating encompasses adaptive, proximate, and phylogenetic explanations.

The first issue one faces in examining the development of monogamy is the necessity of carefully delineated terms. The word monogamy as humans generally understand it and regularly use it carries a suite of societal connotations and cultural baggage. For the sake of evolutionary evaluation it is better split it into two separate, distinct, interrelated concepts: social monogamy and sexual monogamy. Social monogamy indicates a relationship between a male and a female featuring consistently close living arrangements, shared territory and resources, and general behavior as social partners, whereas sexual monogamy reflects an exclusive sexual relationship between two individuals (Reichard and Boesch, 2003). But both sexual and social monogamy are strikingly rare in the animal kingdom. In different branches of the tree of life the extent to which monogamy of any sort has developed varies wildly—over 90% of birds are socially monogamous, but social monogamy has emerged in only 3% of mammals, and among mammals it has developed in only 15% of primates, our closest relatives. The incidence of sexual monogamy is much rarer still, as many organisms in socially monogamous circumstances frequently engage in extra-pair mating (including, of course, humans). Among some species of strongly socially monogamous birds, on average as many as 30% of the young in a given nest have been fathered by a male who is not part of the resident pair bond (Barash and Lipton, 2001). Even legendary Odysseus himself is far from the ideal of sexual monogamy—his multi-year trysts with
Circe and Calypso over the course of his return trip to Ithica are telling of how frail the inclination towards sexual monogamy is even in the idealized heroes of humankind. Monogamy as we speak it really means two closely related, but not at all identical, things, which should be evaluated as such.

Why sexual monogamy is so much rarer than social monogamy is an interesting question of its own, with broad connotations. If the fellow organisms we consider to be generally monogamous are any indication, neurological mechanisms in mammals that foster social monogamy can and do allow for sexual inclination towards the social partner to be surmountable. This opens up a Darwinian can of worms, a large and challenging array of situations that can be hard to reconcile with the norms of selection, such as males investing significant resources in raising children that they did not in fact father. Yet at the same time the inclination to cheat can follow intuitively from the Darwinian imperative to pass on genetic material with the most fit mate—because that mate may or may not be your own partner. One possible answer hypothesized from the observation of socially monogamous primates is that extra-pair copulations may serve monogamous relationships in a roundabout way, via their role in forestalling infanticide—males may be less inclined to kill infants they come upon if the infants may be their children via extra-pair coupling (Reichard, 1995).

Ironically, one of the most oft-examined organisms in the study of mammal monogamy indeed has precious little resemblance to primates at first glance: the prairie vole, a type of tiny burrowing rodent, lives in extremely socially monogamous circumstances, forming lifelong pair-bonds and raising young in tandem. Neurological study of a shared genetic variation in neuropeptide receptors between humans and these voles suggests that some of the same basic chemical factors might be responsible for the common inclination towards social behavior in both species (Walum et al, 2008). By chemically inhibiting specific receptors, researchers are able to inhibit or block entirely the development of many aspects of vole sociality, suggesting the vital role the neurochemistry plays in social development. Many of these receptors, strongly clustered in the frontal lobes of vole brains, are far less concentrated and less common in the close relatives of the vole who exhibit no socially monogamous behavior. Among these pivotal receptors, some govern the movement and acceptance of dopamine within the brain, regulating when and why the organism feels pleasure, and what inputs the organism associates with that pleasure—namely, in this case, that organism’s partner. Some of these receptors also govern the strength and duration of recognition, a vital early prerequisite for the formation of long-lasting bonds between individuals. The similarities in brain chemistry are illustrative and compelling, especially in light of the knowledge that even the prairie vole is far from being sexually monogamous; given the opportunity, even these paradigms of social monogamy are
incline to occasionally mate outside of their pair-bond (Young et. al, 2005).

The primates, the closest relatives of mankind, present both problems and insights as well. Only 15% of primates are monogamous, and those that are monogamous aren’t necessarily our closest evolutionary relatives. Neither gorillas, the primates closest to humans genetically, nor the chimpanzee species that are the closest afterwards, exhibit social monogamy—our fellow great apes engage exclusively in either polygyny (many females bonded to one male) or promiscuity (anything goes). Primate monogamy outside of humans curiously manifests much more strongly in some of our more distant evolutionary offshoots, such as gibbons and tarsiers, a type of prosimian. Among gibbons studied in Thailand, 88% of pairings were in partnered groups (Reichard, 1995). Both species are small, strongly territorial tree-dwellers who at first glance share much less in common with man than do the variously promiscuous great apes, a puzzling picture of selection. Yet even among the monogamous primates there are immense differences in practice and pattern of mating and partnership that reveal gradual evolutionary grades. Several models attempt to capture the occurrence of primate monogamy, variously centered on the relative scarcity or abundance of females, the necessity or lack thereof of males as a defense measure against predators and to protect resources, the extent male parental care is required, and the variable need for defense against infanticide. The extent to which each of these factors comes into play shapes the precise nature of the monogamy that has developed (Fuentes, 1998). The factors that unite and divide these disparate parts of the primate family in selecting a similar mating strategy can be illustrative as we turn to why it is a driving force in humans.

We come now to the hundreds of thousands of years of human evolution that contributed to the human story of a man willing to defy his gods to return home. The factors that brought about monogamy in humans are oft-debated, but convincing arguments can be made for several significant factors that might have had a role in bringing the shift about. A large part of the answer for Odysseus and Penelope may have to do with their son, Telemachus. One reason why many scientists suppose social monogamy is so common in birds is because eggs are completely defenseless and require constant watch, which means two partners must work together closely to take turns watching eggs and gathering food (Reichard, 2003). A similar explanation might help account for human monogamy. Selection for larger brains in humans incurs various costs on metabolic and developmental levels. Human infants massively inhibit the mother during pregnancy on a scale fairly unique in the animal kingdom. The growth of the infant’s head within the mother is inhibited by the narrowness of the human’s fused hip and likewise birth canal, a byproduct of bipedality, so to reach a large brain size significant early growth and development must take place outside of the womb (Bogin, 1997). Human
infants are born highly altricial (helpless and unable to fend for themselves), a state which does not pass quickly—the infant is in need of constant care over a period of years. Humans have lost the abundant body hair of their ancestors, which inhibits one partial solution many primates employ, where infants clutch on to the mother’s fur as she travels (Ross, 2001). The evolutionary contrivance and the ensuing demands of large brains would present an extreme challenge to the other ways primates mate and form social relationships—polygyny (with only one male among a large group of females, of which many are likely with children) and promiscuity (without a permanent partner) both seem inadequate and ill-suited for the challenge of humanity’s demanding child care, whereas monogamy seems to provide a natural solution in the same fashion that birds employ. From a practical perspective, a mother who must carry her infant in her arms in order to travel has few or no recourses for gathering food or trying to protect herself, and so selection has favored an arrangement that can provide both, using the partner that has the most genetically staked in the success of both mother and infant, the father.

There are many other approaches to answering the problem of monogamy. At issue in many of them is the question of female monopolization, where the extent to which females can be exclusively dominated by males governs the development of monogamy. Sparse and solitary female populations, where it would be difficult or impossible for males to interface with more than one female over extended periods, would foster monogamy. This makes sense; given certainty in the knowledge of their exclusive relationship with the female (i.e. certainty that children will be his own) males will be willing to increasingly invest time and resources in the success of a single partner and thereby his children. There is a close phylogenetic correlation in mammals between female space usage, represented by the female’s home range and the overlap of the home range with other members of the same species, and the emergence of monogamy within mammals (Komers and Brotherton, 1997). One school of thought evaluates the development of monogamy not as a partnership, but in terms of a shifting battle of investment and return within pair-bonds as game theory. Males and females certainly have different prerogatives that might maximize their reproductive success even in nominally socially monogamous circumstances, and the way these prerogatives shift between genders could have a significant role in the specific flavor of monogamy that humans have come to employ. Males might optimize their own reproductive success by seeking extra-pair mating opportunities, but they may do so at the cost of time and energy that could have been invested in the pair-bonded female’s offspring. Likewise for females, who might mate with other males for their own reproductive sake, but dilute the partner male’s chances at paternity as a consequence. An evolutionary arms race is the result, producing both positive and negative feedbacks, and it could account for idiosyncrasies and challenges that humans know all too well within monogamous arrangements—for exam-
ple, it might account for why female apes display visible external signs during periods of sexual fertility, but human females do not (Hosken et al., 2009).

Compellingly, propensity towards fidelity in females seems to have a strong genetic component, as there are strong correlations for infidelity episodes in female twin pairs that have been studied (although the factor governing the infidelity is not the vasopressin receptor gene that governs similar behavior in prairie voles) (Cherkas et al., 2004).

One question that arises from this research is the extent to which real emotional attachment between human partners, as opposed to pure genetic imperative, serves to enforce and sustain monogamous relationships—that is, how the proximate causes of monogamy serve to enforce its ultimate objective. While a rational optimization of reproductive success can explain monogamy in the ideal, it has difficulty explaining why we are so drawn to the example of Odysseus, whose extreme display of attachment saw him blind a Cyclops, sail the river Styx, and butcher his wife’s suitors by the dozen. Phylogenetic evidence suggests that attachment and monogamy go hand in hand, corresponding directly to the tandem manifestation of factors like strong parental care and small group sizes. The research suggests a close relationship between the origins of adult attachment, as appears in humanity, and the infant-caregiver attachment, which is common in mammals at large. Much of this may be due to the neoteny (retention of juvenile traits in an adult) hypothesis. Compared to our close phylogenetic relatives, humans exhibit highly paedomorphic heterochrony. We retain for comparatively highly prolonged periods many traits that are emblematic of childhood in apes, like hairlessness, toothlessness, and sexual immaturity. The neoteny hypothesis extends the influence of neoteny to the phylogenetic history of the human mind, arguing that the infant attachment that becomes dormant as apes mature remains with humans into adulthood, allowing for strong pair-bond attachments to form (Fraley et al., 2005). Cross-cultural analysis of the stability of human pair-bonds suggests that key factors in maintaining reliable, stable attachments include significant male-male competition (which encourages treating the female partner, who has many alternatives, well), significant paternal investment in child (which binds the male to the infant, who via lactation is bound to the mother), and ecological complementarity (i.e. the male hunts and the female gathers, enhancing the diet and thereby the well being of both partners via cooperation) (Quinlan and Quinlan, 2007). Monogamous adult attachment is puzzling upon first appraisal, but its origins as a product of our evolutionary history and its utility as a mechanism for deepening the bonds vital to human evolutionary success remain clear.

Anthropology has provided examples of many human cultures in which mating norms are far from monogamous—but their relative scarcity and isolation seems to make them an exception rather than a rule. And one must be careful
not to consider transformational factors unique to very modern history, such as early infant weaning, low child mortality rates, and highly sophisticated economies, when considering the isolated and harsh conditions of mankind’s early development. Although sexual monogamy is tenuous in humans, as it is almost everywhere else, social monogamy is strikingly common across cultures (though of course the norms and standards of marriage, mate choice, and infant investment can and do vary greatly between both individuals and societies) suggesting at least partial inborn evolutionary impetus. The story of Odysseus has lost little of its universal and instant appeal with the passage of time. Perhaps that is because it speaks to a common, unceasing odyssey that mankind knows all too well, and struggles with day by day: the way we care for the ones we love.
References


Part III

Good and Evil
Seven billion. This is the number our population is approaching and yet, with such a large group, there is something peculiar. Each one of us is unique, different, but why? What prevents us from all being the same, homogenous to those around us? Is it simply biology, evolution, psychology, science that creates this diversity? Or is there more to it than that. Maybe, just maybe, there is a master plan. A plan designed to spur the randomness that is creation, to bring together our individuality into something more. Altruism. Is this the answer? Is cooperation what unites us all under one spectrum, defines the human race as not a vast herd of people but instead, a large unit, unique, but together by selfless instincts? If this invisible string does indeed exist, what is its driving force and how does it prevent us from following our instincts for the betterment of others? Is this nature’s answer to natural selection, an attempt to slow down evolution to promote brotherhood and togetherness? Or are we missing something, someplace else where we must look for answers to the questions about our nature.

“Mr. Isaac? Mr. Isaac?” No answer. Hiro Nakamura and his best friend Ando Masahishi walk into the room of Isaac Mendez. Hiro calls again, “Mr. Isaac? Mr. Isaac?” Once again, nothing. The silence engulfs the two friends as they walk down the stairs into the leftmost room. Here they look down and see the slightest trail of blood that leads through the hall and into the nearest bedroom. “Should we follow?” asks Ando, slightly scared of what’s to come. Hiro exclaims, “OF COURSE! We must find out what happened to Mr. Isaac.” The duo rushes down the hallway to see, in the nearest room, a man lying on the ground, his head ripped open and his brains exposed. Frightened, Ando once again asks Hiro if they should continue. Emphatically, Hiro states, “The path of the hero is tough. God has given us the gift of choice. I have chosen my path, regardless of the danger it holds. I want to be a hero. Save the cheerleader, save the world.”
What exactly do we make of Hiro’s, one of the main characters in the popular TV drama entitled *Heroes*, decision? The decision to disregard danger, to put our instinct on hold, in an attempt to save others? How do we explain this act of courage? Is it rational, irrational, or do we just not know? To truly understand this, we have to look at the true nature of altruism before we can jump to this extreme case. Why do humans express traits of altruism? Is cooperation innate or is it something we have come to acquire over time and in either situation, how does it fit into the process of natural selection?

The French philosopher Comte coined the term altruism in the 1850’s in an attempt to create a new ethical system in which man looked to act in ways intending to improve the overall happiness of others rather than himself. Comte felt that promoting cooperation rather than competition would lead to a society filled with harmony, an escape from the horror seen in France during that day and age. The idea of an altruistic society captured the minds of philosophers and scientists alike, as there was a search to find the bridge between altruism and selfishness. It is commonly accepted that animals in general are selfish and humans, being animals, are no exception. When we look into nature, although we see cooperation within species, the competitive instinct is much more prevalent. Except for parent-child relationships, in nature the true extent of cooperation and altruism is seen in hunger and the struggle to survive. Animals compete for food with the mentality that their survival is more important than that of their peers. This selfishness is biological: if an animal can eat and ultimately survive, it increases its chances of passing on its genes on to its offspring (Ridley 18). Even in parent-child relationships, it can be argued, and argued fairly convincingly, that the driving force behind selfishness on the side of the parent is genetic security. If the parent can insure its offspring lives on, it guarantees the passing of its own genes. The selfishness is presupposed by a hidden selfish motive in animals. If this is the extent of altruism in animals, who is to say humans are any different?

Altruism in humans is slightly different than it is in animals because of its relation to society. With animals, humans analyze it simply from the perspective of the animal’s motives but with humans, “what matters to society is whether people are likely to be nice to each other” (21). The hidden reason why humans act altruistically is nowhere near as important as the act itself. Giving to a charity is a wonderful act and yet, nobody really analyzes the fact that many charity donations are given simply because they are tax deductible. The act of giving is good enough for society; the rationale behind it isn’t nearly as important. Yet, the selfish aspect of altruism is still present, even in humans. Take for example the idea of inheritance. It is tough to find an example in human societies anywhere where parents don’t try to pass on their wealth to the next generation and instead spend it all or donate it to charity. We give to our children, our loved ones because we hope for their survival. To an economist,
this makes no sense as the deceased receive no benefit from the action and it is thus deemed truly altruistic. But upon closer look, the action of giving comes back to selflessness based on selfish genes. Providing your children with wealth increases the chances of your genes being passed on, similar to the parent-child relationship seen in other animals.

Thus, is there then such a thing as pure altruism? Altruism without the hidden selfish motive of self-betterment? Emmanuel Kant claimed that “only those who do good out of cold, unmoving conviction are ‘true’ altruists” (21). But do these individuals exist? Is there really such a thing as true altruism? The answer, as we have just seen, is no. Selfishness plays a part in all “altruistic” behavior. Why do humans engage in trade? Because, according to economic principles, trade is beneficiary for those who enter into it voluntarily. To the individual, the consumer, the state, the most important result of trade is selfish. Trade benefits us and that is why we trade; the fact that the secondary party benefits is icing on the cake. History has shown us that trade isn’t altruistic. In the days where mercantilist ideologies ruled the economic sphere, trade was based on force and power. The idea of accruing mass wealth was more important than the welfare of those from whom the wealth was taken. This utter disregard for the wellbeing of others hasn’t changed when it comes to trade its just the harm that is inflicted on the other party has been eliminated because it is seen as inefficient. Even time hasn’t changed the selfishness behind our altruistic tendencies, what is beneficial for us is what we as humans hold in highest regard, just as animals do in nature.

Where then does the idea of extreme altruism come in? We continue with our story of Hiro Nakamura. Throughout the course of the television series, Hiro comes into contact with life threatening danger and yet he never backs down as he sees saving the lives of others as more important than his own. This type of behavior, known as extreme altruism, occurs throughout history in a plethora of places, from tiny ants serving their queen to modern day society and firefighters risking their lives to save people captured in the twin towers.

In the animal world, extreme altruism comes down not to bravery or courage but to kin selection (Ridley 28). The idea of kin selection is that some organisms tend to favor the reproduction of a relative over their own lives. This seldom occurs in larger animals but in the ant and bee worlds, it is extremely prevalent. Often times, ants and bees will work and sacrifice their lives away so that the queen, the only insect capable of laying eggs can effectively reproduce. This however, poses an interesting question to natural selection. How does natural selection act in a scenario when an organism is specifically choosing to give up its right in order to spur reproductive success? The only solution comes from the idea that an organism’s individual genes are very similar to those of its relatives. Choosing to sacrifice ones own genes for the
good of multiple relatives ensures that the vast majority of one’s own genes are passed on. This in itself is artificial natural selection as the organism is selecting for its own genes to pass down by itself through the giving of its own life independent of natural selection.

In the human realm however, things don’t always work this way. People give their lives away knowing full well that their genes may never be passed along. This peculiar characteristic seen in human eliminates the argument of kin selection in humans and instead fosters a different perspective on extreme altruism.

Without a doubt, the most obvious form of extreme altruism in humans comes during wartime. Individuals will risk their lives to save their families, their neighbors, and their countrymen without any hope of genetic progression. Boyd et al. (2002) argues that humans act this way because of phenomenon known as group selection. Group selection is the idea that, in certain cases, natural selection will choose for certain alleles for an entire group and will pay little attention to individual alleles. This occurs because the entire group displays traits are to be selected for. This idea possibly explains the reason why humans may give up their lives in times of war. Those who engage in combat have been through rigorous military training are fit, and strong. These individuals exhibit astounding acts of courage and valor and impose their strength on others. In a world of survival of the fittest, the stronger army is more fit and thus natural selection selects for the genes of these individuals. This means that even in wartime, where a soldier is seen to be the focal point of glory, there is a selfish, hidden agenda behind the actions. Group selection tells us that altruism, during wartime, isn’t selfless.

What then explains the firefighters after the terrorist attacks on September 11, 2001? These men weren’t soldiers; they weren’t extraordinarily strong or fit. Group selection wouldn’t have favored them; there were too few in number. Could it be that these men were acting simply out of altruistic ideas without any hidden motives? Initially, it seems like this may be true but previous historical precedent tells us otherwise. It is possible, that even in cases where altruism appears to be pure, genetics influences impact the person acting in altruistic manner.

The case of the firefighters during 9/11 is similar to those of individuals who often receive the Carnegie Hero Medal. The medal is given out annually to groups of people who engage in acts of heroism but only when the acts of heroism are related to complete strangers and not family members. In short, it is given to individuals who act heroically without having genetic motives behind their actions. Interestingly, the acts are often considered quite spontaneous but more often than not, they occur with people who have relatively large physical prowess and skill (Becker et al. 2004). Why is it that that par-
Hiro the Hero

Anand Mehta

ticular physiology relates very well to heroism? It’s actually quite simple. Heroism often elicits a sexual response from someone of the opposite gender. It shows not only physical strength but also mental courage, caring, and compassion as well. These are all traits that portray a strong sexual partner and thus we have the reason for these acts of heroism. People act in this manner in order to secure a sexual partner (Tessman 1995). Humans in general have the mentality that they, on the individual scale, are immortal and thus when acting in this heroic manner don’t consider that their lives may truly be at risk. Moreover, to humans, the reward greatly outweighs the risk as acting in that particular manner as it not only causes people of the opposite gender to feel sexually attracted towards them but it also creates the ability to choose your mate thus explaining the firefighters rationale for engaging in such activities. This artificial selection gives the “hero” the opportunity to determine not only which traits he/she wants in the opposite sex but ultimately which traits he/she wants passed down in his/her offspring. The selfishness behind the act is apparent as it allows the actor to ultimately help determine the sexual selectivity of not only himself but of his children as well.

Even in cases where altruism is needed for survival there is a selfish aspect to it. Becker et al. (2004) discuss the actions taken by individuals in the holocaust and how altruism played in as a strong factor there. For the Jews in the holocaust, survival was an all or nothing effort. The Nazis had them running from city to city, shooting those who lagged behind and because of it everyone had to band together for survival. This group ideology combined with the Nazi’s “survival of the fittest” selection lead to everyone helping each other survive.

This is where the selfishness kicks in. On the surface, it appears that everyone was helping one another because they didn’t want anyone to die but in reality that’s not true. The altruistic behavior had an underlying selfishness that explains the reason many of the Jewish people risked their lives for their peers. The Nazis put the Jewish people through extreme situations, forcing them to run for miles upon miles from camp to camp, to sleep with soldiers. In order to survive, everyone was forced to help each other. This extreme altruism where everyone was putting their lives on the line to save others only occurred because of the impact a large population would have on the individual. Having a large population decreases an individual’s chance of being selected by the Nazis to be raped or killed. The percentage chance of being chosen decreases when the group is large and thus the Jew’s attempted to help one another survive.

The story of Hiro Nakamura, the story of true altruism without selfish motives is, unfortunately, the creation of Hollywood. In the story, Hiro has no selfish motives when he attempts to save the world but the real world has seen no
such case. It seems that altruism is really a façade to the selfish motives people truly have. Be it through the idea of survival or an attempt to pass down genes, altruism is inherently egocentric. The reason society doesn’t see it as such is because the various actions that cover the front of selfishness are seen as heroic and honorable. People dream of acting in such ways but when it comes down to it, human instinct tells us that we should only act in an “altruistic” manners when it helps us survive or pass down our genetic traits. As seen by the firemen and military soldiers who acted heroically to increase there sexual selectivity or the Jews in the Nazi interment camps, the act of saving another’s life while risking ones own is only done when there are selfish motives that are more important than losing one’s life. It is sad that people don’t act altruistically but selfishness is a part of the human culture. Selfishness may cause acts that are perceived to be altruistic but true altruism as defined by Emmanuel Kant doesn’t exist in our world.

References


The Evolution and Advantages of Religion

Blair Pierroz

Throughout history many people have developed theories as to the reason why religion ultimately arose and remains today. Many of the greatest minds of the recent centuries have grappled with this topic. Thomas Hobbes considers the rise of religion as a tool of the state, one to keep us in line in a godless world. He perceives our primary goal is to seek pleasure and avoid pain, but if everyone is attempting to fulfill these objectives, there will be chaos within the state, thus leading to the necessity of religion for society to operate. Marx believed that religion was used by those who suffer, and will not be abolished until there is no more pain in the world. Similarly, Freud viewed the idea of a god as a contrived caring father to replace our own once we were thrown into the terrors of the real world. While on an ultimate level these may be true, a proximate cause is that in a social species such as humans, those that are more prone to reciprocal altruism because a religion dictates that they be, will be more successful and will thus pass on their religiously receptive genes to their offspring.

In *Brave New World*, all of the reasons for a God addressed by the three aforementioned minds have been resolved. The state has abolished the need for any religion as a way of maintaining social cohesion, making itself the omnipotent force in the world (Huxley 1932). There is no pain, as everyone is genetically and psychologically manipulated to be content with their lives. If they are not, there are drugs and many other means of alleviating the problem. Finally, there is no need for a secondary father figure, as there is no primary father figure, because everyone is made in a factory. Thus religion has fallen away.
In a world where free will is restricted by the hand you are dealt as an embryo, morality begins to fade away. The government has gotten rid of strong emotions, desires, and human relationships, making religion obsolete. On the Savage reservation, there still remain remnants of an ancient religion based on ritual. When observed by those who are from the outside world, religion is viewed as comical and quite foreign. They do not understand the necessity of religion to those who must form their own fates. The question arises as to which of these two worlds is in fact the superior, as characters must grapple with their lack of free will in the “civilized” world. Is such a painless straightforward life really the ultimate goal of the human race?

One of religion’s main purposes is to form bonds in the group, making one value the community over their own personal needs. When the state dictates how everyone will act by manipulating their DNA, the need for social order through general fear of the supernatural fades away. It also has little use on a personal level, as any benefits that a religion can offer are minuscule in a “utopian” society. The New World proves to be anything but utopian in the end, but due to psychological and genetic manipulation, those that are a part of it do not even notice the problems that may exist. It relates back to Marx’s famous quotation, “religion is the opiate of the masses”, for when everyone is content in their roles and satisfied with their lives, even if artificially so, then the personal necessity for religion also goes away.

Religion is common to almost all societies around the world both promoting cooperation and punishing wrongdoers. It helps people become socialized into a community where everyone has the same beliefs and morals, many of which favor collaboration and altruism. With a punishment for defectors in place through the notion of an afterlife, it allows for widespread altruism within a group. It also threatens punishment for those who do not follow the regulations set forth, the more powerful of religion’s two main aspects.

Taking *Brave New World* as our model, we can see that religion may come about as a way of ensuring reciprocal altruism within a group. This particular view has received a fair amount of backing, but finding the causes of religion is a question that will always be shrouded in debate. However, if we begin to take the view that the needs of the individual are outweighed by those of the group when religion is incorporated, then we at least have a proximate cause. Reciprocal altruism came about in ancient hunter gatherer communities mainly in the exchange, sharing, and giving of food (Ridley, 113). Whether this was in the form of group hunting of large game or in sharing when game was caught, there was a vast increase in the amount of food for each individual member when there were group efforts. This was dictated by reciprocal altruism, a system that was played as a sort of tit-for-tat game. It meant that those who killed large game shared with the rest of the community. With this
comes the belief that religion is a way of ensuring that people conform to the social nature of the group and do not freeload on this system. Humans are very social creatures who rely on each other as a way of survival, but this support also provides opportunities for individuals to defect.

For reciprocal altruism to work however there needed to be a way to prevent freeloaders. This could be done in a number of ways. Benefits could be given to those who cooperated, whether in prestige, tangible goods, or mates. This in itself is a very good motivator for selflessness. This was not always the main system to do this though. Another successful method was, and still is, to have everyone buy into a system that the group is greater than the individual. This is what great politicians and public speakers are able to do even today. However, when this too was ineffective, then there could be punishment for defectors. Moralizing gods arising from religion can be very effective at both motivating people to buy into a system as well as providing a means of punishment for those who defect. (Roes 2003; Johnson 2004).

In order for individuals to buy into the idea of religion and believe in the cooperation that comes along with it, a system of ritual was put in place. In an effort to remove one’s instincts to follow through with self-interested actions, a general community was established through the communal act of ritual. Ritual is a very strong tool that can strip a person of their individual identity and make them a part of something more within the group. This would often occur at a young age, as children are more impressionable and receptive to the teaching of those around them. This has proven to especially be true of sacred images and beliefs (Alcorta 2005). When brought up in a society of a certain religion, a child is very likely to buy into the entire belief system of the community, as culture is a very strong way to create conformity.

With these cultural pressures, people have a powerful disposition to avoid guilt and shame, as their status within the group is very important (Ridley 136). This guilt avoidance and social status are both deeply tied into many modern religious institutions. Prestige and perception are ingrained from a young age. Because of this we are very wary of the way that people view us. We go to great lengths to avoid unpleasant situations that involve social shaming. We will do things for others to maintain a reputation or get out of blackmail. Because of this constant paranoia we are very susceptible to the idea that someone is watching our actions and judging us accordingly. This has been proven with placing eyes on collecting dishes and observing that donations have greatly increased (Bateson 2006). At a subconscious level we believe that we are being watched and because of this, act accordingly. Religion greatly plays off of this aspect of our psyche. When people believe that they are being watched they act differently. Thus, religion implements an ever present deity that sees all. This not only hinders anti-social behavior, but
implements a punishment for it as well (Johnson 2006).

This social aspect of religion seems to fit well, however the origin of religion, and its individual uses is a widely debated topic. Many modern day followers of Western religions take an outlook that it allows for hope within an individual. This allows them to carry out mundane and otherwise torturous tasks that need to be done with the belief that they will be rewarded later on. Others believe that it is a tool of the state used to punish those who defect. Punishment is costly, so by implementing a supernatural power, it prevents defection while at the same time providing punishment. Through this it allowed larger and larger societies to form. This socializing aspect may have allowed control over such large groups that would not have been possible otherwise. In competition ridden areas where cohesion was necessary to the survival of a group, these aspects that religion promoted were needed to ensure the sanctity and safety of the entire community (Roes 2003). It promoted enough cohesion and cooperation, while also providing punishment for those who went against the regulations that ultimately allowed nations and empires to rise.

While religion may have assisted in the formation of larger communities in its later forms, it seems more likely to have evolved as a way of ensuring reciprocal altruism and to enhance the wellbeing of the community over that of the individual. Religion is believed to have originated long before civilization, with the Chauvet caves being an example of early spirituality. With this community-first mentality came increased cooperation and the group did better as a whole. Ridley talks a lot about reciprocal altruism, however it is very difficult to police and sustain without some guidelines. Thus religion could have been the tool used to ensure that the system was effectively carried out. As time went on it is possible that those who were more susceptible to the idea of supernatural intervention and punishment were more successful within the group.

While it is unsure as to the nature of why religion originated, it seems that it carried with it some benefits, for today it is an aspect of the lives of almost everyone on the planet in a multitude of forms. Following some form of a higher power, they either were able to find mates, or avoided the punishment that came along with defecting. Thus this trait could have been passed on from generation to generation. It does not matter who or what a person believes in, simply that they do. This belief could cause them to act in a specifically social manner that benefits both those around them and themselves. They are more altruistic to the group while at the same time incurring prestige and possibly even mates.

There are ties in our limbic system that cause us to not only believe in something but also to become emotional about that subject (The Pew Forum 2008).
This is a necessity for religious beliefs because if we believe they came about as a way of ensuring reciprocal altruism within a community, then when someone threatens our religion or our group we need a motivation to respond, and emotions provide this. If someone is disagreeing with you on a religious issue, then it sparks a very strong negative reaction, because they are obviously not a part of your culture and community, and thus could be an outsider and a threat. In a time when small tribes fought for precious land and resources this could be an effective way of delineating between in and out group members. The emotions then spark a response, so as to defend your kin. The individual is acting in the good of the community as religion has trained them to do. Religion seems to generate a very defensive and strong response emotionally to outsiders, and could be why there is so much tension between religious groups even today.

This tension today does not have to do with doctrines or dogmas or beliefs, it has to do with the emotional response we are genetically prone to have when someone disagrees with us, especially about religion. This is why religious wars are against their own doctrines, yet are the most frequent of almost all wars. There is such an emotional tie to religion, a xenophobic response that causes us to act, even if that action is in direct conflict from the teachings of the religion that is causing this response. So while this may seem very contradictory from a logical standpoint, it makes sense on a genetic and psychological standpoint.

Neurons in our brain wire themselves in whatever way we tell them to. Andrew Newberg repeatedly says “neurons that fire together, wire together,” meaning that the more we use them, the more they become an ingrained part of our psyche. Thus when we are constantly inundated with religious doctrine and dogma, it becomes wired into our brains (The Pew Forum 2008). This constant flow of religious information into our brains makes us more and more susceptible to it, until our neurons are so programmed to this belief that we are willing to die for it. This also goes back to the emotional aspect of our limbic system. Not only does religion spark specific feelings, but it becomes deeply ingrained in our brains to the point where we cannot get it out. The problem with neurons however is that if you don’t use them you lose them. This can be used as an explanation for the necessity of ritual within religion. There is a need for worship, ritual, and any other number of religious activities to ensure that our neurons continue to fire the way that they are. With weekly services, scripture reading and study, and pressure to pray every day, we ensure that we keep our receptors open and our brain remains prone to these beliefs.

In order for religion and the community to flourish even those who are non-believers need to avoid the temptation of defection. Otherwise they will gain
an advantage at the expense of the group. If they are self-motivated then they will simply take advantage of the altruism of the religious without reciprocating. James Dow suggests that one reason why the non-religious would continue to aid their group members would be because they were inspired by their sacrifice and dedication to a deity. I feel that the non-religious do need to continue to support the community without simply freeloading on the altruism of everyone else. There are more safety nets in place in prehistoric society to discourage freeloaders of the altruism of the religious members. I think there was less altruism in the nonbelievers’ reciprocation. They were actually looking out for their own needs. There would have been if nothing else a reduction in sexual fitness of those who were not a part of the social norm by rejecting the faith of the community, and especially for those who provided nothing for the group by simply freeloading. They would have felt social pressures to act. And if these pressures were not strong enough, then there would have been threat of ostracism. Early religion was more about ritual and shamanism and less about morals, reducing the likelihood that a nonbeliever could in fact successfully avoid any work without donating something to the group.

On top of this there would have been less freedom to reject the beliefs of the group. One would have been forced to comply, or at least pretend to. It was more of a social aspect as opposed to one of what we consider modern faith. This would allow time for religion to become a stable part of our psyche and make those that are receptive to it more fit both because there would be social as well as survival benefits. Those that were receptive would have been able to create bonds through the rituals and possibly even increase the chances of finding a mate. In addition, by buying into the group mentality, the entire group would become more fit as reciprocal altruism would increase because of the bonds made by religion as well as the selflessness that comes with the religion.

There is now some evidence, although not very much, that this receptiveness to religion has actually translated into genetic information. So as it developed over time, those that were more receptive appear to have done better, and thus were able to pass on those genes to their offspring. It now appears that this receptiveness can be attributed to specific genes. One in particular, that is now being referred to as the “God Gene” is VMAT-2 which is directly related to the release of serotonin and dopamine (Hamer 2005). While it is only a fraction of the cause, the fact that the specific gene has been pinpointed points to the fact that there may actually be something credible to the notion that religion is an evolutionarily beneficial aspect of our species. Also because it is related to powerful neurotransmitters it would increase the idea that it is related to the emotional side of our evolution. These are feeling based transmitters, and thus if they are related to the “God Gene” then it shows how connected
The Evolution and Advantages of Religion

Blair Pierroz

emotions and religion are, but also how powerful religion can be as both an evolutionary benefit but also as a personal motivator (Hamer 2005).

Religion can be attributed to increased reciprocal altruism within groups, especially in ancient close-knit societies. This increased cooperation led to increased fitness to those individuals who bought into the idea. This allowed them to pass on their genes to their offspring, genes which now appear to have receptiveness to the notion of deities. These genetic implications in turn can be associated with emotional ties, both joy and anger in those who believe in some form of a higher power. Also, psychologically there appears to be ingrained susceptibility to both the notion that we are being watched and our deeds are being scrutinized and the idea the cultural ties to sacred images and rituals. The true reasoning for religion may never be known for sure, however from an evolutionary standpoint, it appears to have increased fitness through group cohesion, and that those who are more prone to believe in higher powers have some advantage over those that do not.

References


The Selfish Gene and The Heroics of the Last Kryptonian

Avinash Chandrashekar

Man has always been fascinated by the concept of heroes. Heroes are honored in ancient cave paintings and in folklore and myth. Medieval authors wrote a great number of epics, and more recently—authors like Tolkien have woven intricate tales around men who have extraordinary abilities and do great deeds. Most recently we have the concept of “superheroes”, used to describe a figure (usually) endowed with superhuman powers and usually portrayed as fighting evil or crime.

Consider the case of Batman; Batman is a character whose parents were shot and killed in a mugging when coming back from a movie. The young Bruce Wayne is so affected by this that he devotes his parents’ riches to becoming a masked vigilante. Numerous other superheroes devote their lives to seemingly suicidal missions that logically speaking, make almost no sense. Yet, a gene centric view of evolution helps provide some answers as to why these paths of action are chosen.

The gene centric view of evolution, popularly dubbed as the theory of the “Selfish Gene” has been a breakthrough in our understanding of human behavior helping explain why organisms sometimes exhibit altruistic behaviour even though it could be detrimental to individual fitness. In this theory, adaptations (either behavioural or physical) are the phenotypic effects through which genes achieve their propagation. Often the behaviours that the genes induce in the organism will cause it to behave in a way that will increase the chances of that gene being expressed in future generations.
A simple example of this is behavior is kin-selection, which explains why people would be more likely to help those who are closely related more than someone who is more distantly related as organisms would tend to favour the reproductive success of their relatives over others. This would increase the chances of their genes being expressed in future generations. The above behavior is something a plain Darwinian view would fall short of explaining as it would predict that people would be as likely to help any random stranger as a family member. It is important to remember that differential reproduction is still what drives evolution.

With this small background, let us proceed and try to understand why the behaviour we see exhibited; both by the character, and the readers may not be so unreal after all.

Take for example Superman, who has faced mortal threats before. He had his home planet destroyed and has enemies with the exact resources to take him down. It would seem that putting himself in danger to save the lives of strangers offers to him no benefit—after all Superman doesn't have a share in the genetic code of the future generations. In addition, why should we expect Superman, an alien—to exhibit behavior similar to earthlings?

For starters, Krypton is suspiciously similar to earth. It has animals, plants, and Kryptonians procreating sexually. Kryptonians are also not superpowered on Krypton, so prehistoric Kryptonians probably faced the same or similar dangers from wild animals and rival groups as humans did. It doesn't seem a stretch to expect some Kryptonian behavior to be similar to Earthling behavior. And it seems to be similar at least in the case of the last Kryptonian, Superman.

Superman is also—for all practical purposes—an “earthling”. He was born and raised by “Ma” and “Pa” Kent—human parents whose upbringing would have instilled in him very “earthly” values. Superman also looks almost completely human, and even has an “Earthling” girlfriend (Lois Lane). While one can pause and question viability of their offspring, it is wise not to—for they have conceived a child in at least one story.

It is interesting to note that most superheroes have significant others. Spiderman has Mary Jane, Batman has had a number of girlfriends and even a child, the green shape-shifting Martian J’onn J’onzz transforms into an old man and partners with an old lady, the “Thanagarian” Hawk Girl has a child with one of the Green Lanterns. Superheroes, it seems - want to propagate their genes as much as the next person, and they can do so not limited by trivialities like what species they belong to (because in comics, not only is cross-species dating possible, so is cross-species mating). By treating Superman as a human being, it becomes easier to explain some of his behavior using the selfish gene
Superman had his home planet destroyed and Earth is the only home he has, and by safeguarding it, he is able to ensure the possibility of his future offspring. Yet, why he should be heroic even when the lack of his heroism would not affect the survival of his potential mates.

At a glance, it would seem that these could be explained as just another altruistic act—but Trivers' original work on altruism explained only those acts that involved a small cost to the giver, but helped the recipient a great deal (Trivers, 1971). Bravery is quite different, in that it often involves a great cost to the giver.

Seeking to explain this behavior through the selfish gene theory, heroism must have endowed some evolutionary advantage to the genes of those in which this behavior was found. For “brave” behavior to be advantageous, the potential gain from it should outweigh the risks.

Kelly and Dunbar (2001) claim that “heroism may therefore have evolved owing to a female preference for brave, risk-prone males” because such behavior is an “honest cue for good genes”. They also note the prevalence of such behavior in cultures and note that “bravery, self-sacrifice and heroism” are rewarded while cowardice is punished.

Humans have evolved as hunter-gatherers, and women often needed protection especially during the times of childbirth. Women had an incentive to pick their mates carefully—they carry the child to term and then protect it for an additional period of time. The male on the other hand has a more inexpensive investment because he can produce millions of sperm and hence impregnate multiple women.

It would hence make sense for the females to pick those males that exhibited the tendencies that could protect them in times of danger. The other argument that is made for this is that the bravest men would also be the most successful hunters and this would also award them a greater social status and their mates would hence enjoy the fruits of this higher social status, and at the least very simply greater nourishment (Kelly and Dunbar, 2001). This bravery could also indicate greater success in inter-group conflict as only those who are willing to sacrifice themselves for the “greater-good” can indulge in warfare (Steams, 1989). Those successful in war are also likelier to (be able to) procreate and hence it is advantageous to females to pick those males that exhibit these traits, as over time it will produce courageous persons who could protect them in times of need.

Consider the following scenario—a mutation arises for heroism in a population. Initially, there would be no selection for or against this trait. Over time,
only those who are both heroic and have the capacity to survive the heroic act will live. The qualities that ensured their survival would then be desirable to a mate, and there will be selection for these qualities, for which heroism would be a good indicator.

Going back to Kelly and Dunbar’s original claim that this acts as an honest cue for good genes, we see that “heroes” are in a position to shoulder the costs imposed by this risk taking and would hence make good mates.

Yet, taking risks could potentially threaten the survival of the individual as well. It would hence be foolish to pick those mates who take unwarranted risks over those who took necessary ones. It is worth examining if this is indeed the case. Farthing (2005) surveyed whether men and women desire physical risk-takers as partners and the result was that only when the risks were considered “brave” was there any significant advantage in mate selection to those who exhibited this behavior.

We see that a brave act is treated distinctly differently from a regular, risky act. If a person displays tendencies that indicate a desire to protect from some external danger, readily joining a fighting force in times of war, it is more indicative of mate quality than someone who picks fights or defends themselves against a thief, as this behavior is neither self-preservative nor altruistic. Behavior that increases the likelihood of harm to self, without any other potential payoff is judged unattractive because it decreases the ability to take care of the family. Heroic behavior suggests that the person exhibiting it would be more likely to do the same for the mate and children as well. Susan and Kelly convey this very succinctly by saying “risk taking should not be attractive if it does not signal mate quality”.

We see how successful this signaling is when we look at Superman and his alter ego Clark Kent. Both Superman and Clark Kent regularly interact with Lois Lane, and yet—it’s Superman who gets the girl and Clark is often frustrated by his lack of romantic success with Lois, an irony—considering they are the same person.

Superman, as we can now see is no more of an altruist than you or me, and seems to follow the same patterns of behavior that humans would tend to. He is not just “rational” and looking towards self-interest—if he was, he would not be Superman, and would rather be content with the persona of Clark Kent because that would put him, as an individual—in the least danger. He is being Superman because his genes derive a benefit in the long term from the choices he makes. All the same, the fact remains that he is Superman, and we have genes to thank for that. If Superman were merely a product of “The Survival of the Fittest”, he would have been only Clark Kent, or a tyrant with bodyguards. Not that all this should stop you from enjoying the comic any
less but, as we can see, Superman may not be so “super” after all.

References


The Wrong Childhood Collage

Peter Jacobsen

“Evil is not to be traced back to the individual but to the collective behavior of humanity.”
— Reinhold Niebuhr

Imagine a family in which there are three sons. Two of the sons lead normal lives, working together as plumbers to support themselves. The third son’s actions, however, differ greatly from those of his siblings. In his adult years he kidnaps the daughter of a major political figure and holds her captive. His two brothers make an attempt to rescue the daughter, working for good and, in the process, going against their kin. This is a situation that is likely not difficult to imagine, since millions of people around the world have played out this family’s story on their living room television sets. The two good brothers are Mario and Luigi, who fight their way through Mario World in order to face their brother Wario and regain the freedom of Princess Peach. These are fictional characters, but they bring up an issue that has roots in real-life problems. What is it that makes people evil? And how is it that two brothers in the same family turned out so differently than the third one? Personality and temperament are developed as a result of some integral relationships during childhood, the most important of which are with peers, parents, and authority figures or teachers.

To begin explaining certain aspects of a person’s character, one must first identify what types of event can influence a person’s psychological development. The most important stage in a person’s life for the development of temperament is childhood. There are thousands of studies relating to child develop-
ment and how it relates to personality throughout life. Children’s relationships with their parents, peers, and other authority figures have been shown to have an important effect on character later in life (Roff et al, 1972). Specifically, child-development has major ties to the creation of a self-image, which is an extremely important factor in personality development. This self-image is what dictates how children deal with problems later in life (Brown, 2009). Adolescence is also an important time for developing problem-solving mechanisms. The problems children have in adolescence and their way of dealing with them has been shown to have far-reaching effects on a person’s character (Roff et al, 1972). Humans are psychologically very complex, and every aspect of one’s character is not the result of one experience but of many different events and characteristics that come together in one brain. It is therefore impossible to accurately describe the origins of Wario’s evil desires without investigating a wide range of elements of his life and childhood.

The family history of the Mario brothers is at best vague, and the parents of the brothers are completely anonymous. Therefore we must continue under the assumption that Mario, Luigi, and Wario were all raised together. If the three of them had the same guardian, the difference could only have been Wario’s personal relationship with his mother and father. The relationship between child, mother, and father has been shown in be an important factor in determining the self-image of a young child. Children with a better relationship with their parents at the age of 3 have been shown to be more agreeable, outgoing, and generally happy when observed a year later (Brown, 2009). A father’s positive engagement in particular has been shown to have a significant effect on self-image, but more important than the individual relationships with the parents was the dynamic of all 3 members of the family at once (Brown, 2009). Although the fact that Mario and Luigi were raised by the same parents means that there can be no assumption made about the parenting skills in general of the brothers’ guardians, Wario’s personal relationship with his parents may have been radically different and of lower quality from those of his brothers. If this were the case, Wario’s self-image would be dramatically different in the fact that he would be more timid, less agreeable, and have a more negative outlook on life (Brown, 2009). Factors like these could grow more prominent later in life, contributing to Wario’s evil nature.

Relationships with parents remain important through later childhood as well. Tension in family relationships or within individual members of the family have been shown to reduce overall family relationship quality (Birditt, 2009). These types of tension are common, occurring in 94% of all families (Birditt, 2009), but the more intense the problem is the more of an effect it has on the quality of the triadic family relationship. They occur for a number of reasons, including problems within the child early in life and mistakes made by parents later in childhood. These problems are exceptionally important because
problems with family relationships have been linked to the development of antisocial behavior before the age of twelve (Fritz, 2008). Certain types of tension in particular aspects of the triadic family relationship have been shown to make antisocial behavior patterns within the child more likely. Overprotection by the mother, father, or both has been shown to increase the likelihood of the development of antisocial tendencies (Fritz, 2008). Similarly, rejection of the child on behalf of one or both parents, possibly as a result of tension within the relationship of the family or its members, has been shown to have a positive correlation with antisocial behavior on behalf of the child (Fritz, 2008). But not all factors carry equal weight for both the mother and father. A lack of emotional warmth on behalf of the mother had no correlation with the development of antisocial tendencies, while the same shortcoming on behalf of the father was shown to be extremely important (Fritz, 2008). If a problem in early childhood or the development of tension between Wario and his parents led to any of these problems occurring in the triadic relationship, it is likely that by age 12 he had already begun displaying antisocial tendencies. This type of behavior could easily manifest itself later in life in the form of an evil or violent nature.

Relationship with peers, particularly at school, can be an important determining factor in a child’s psychological development. The quality of these relationships is usually determined by pre-existing aspects of a child’s character, such as the exhibition of externalizing problems, attention-seeking behavior, and immaturity (Gazelle, 2008). Students less accepted or more rejected by their peers were found to be far more likely to display behavioral problems than those seen in high regard by their classmates (Efrati-Virtzer, 2009). These students are also far more likely to form reciprocal rejections of their classmates than those that do not exhibit disruptive behavior, and are also less likely to form mutual friendships (Efrati-Virtzer, 2009). Children typically have a desire to be accepted by their peers, but those exhibiting behavioral problems are often unable to do so. These children are called anxious solitary children, and they tend to exhibit about twice as much reticent behavior at recess than other children (Gazelle, 2008). Children with a tendency toward attention-seeking or immature behavior are more likely to be excluded and victimized by their peers (Gazelle, 2008). This is a very important clue to the differences between Mario, Luigi, and Wario. If Wario’s individual relationship with his parents in early or late in childhood caused him to develop this sort of behavior, it could have caused him to be excluded by Mario and Luigi during their school years. This rift could be the origins of their conflict that took place when Wario kidnapped Peach and the other two brothers attempted to fight him. This victimization and exclusion, particularly if coming on the part of his own brothers, can further alienate the problems already developed in a child. And if Wario had already developed problems early in life as a result of his family dynamic, this would only worsen the problem.
One of Wario’s defining characteristics is that he is significantly larger than either Mario or Luigi. Wario’s obesity could be a very important factor in his personality development, particularly in his early teenage years. It is likely, though not certain, that Wario’s weight problem came as a result of not getting enough exercise. Studies have shown that teenagers with a low level of physical activity or a high level of sedentary activity are more likely to develop psychological problems than those who stay active (Ussher, 2007). Children with low activity levels also have a higher likelihood of developing externalizing problems (Laukkanen, 2002). Externalizing problems have been related to school bullying and health-damaging behavior, which may be very important insight for Wario’s path to evil. If a weight-problem began leading to bullying as a teenager, that could easily be an early sign of Wario’s psychological difference from Mario and Luigi.

If externalizing problems were indeed part of Wario’s problem, they could have been a result of many different factors, each of which could contribute to his overall lack of psychological well-being. As well as being important for self-image, parenting has also been shown to be related to externalizing problems. Studies show that children with poor relationships with their parents are more likely to deal with externalizing problems than those with strong relationships (Karreman, 2009). If we continue with the assumption that Wario had a strained relationship with his mother and father, this provides further evidence for this being a major factor in determining Wario’s overall temperament. Also, the fact that children exhibiting externalizing problems create fewer friendships and are more often rejected and victimized by their peers could have further negative effect on Wario’s temperamental tendencies. The evidence for an externalizing problem being present in Wario’s psychological make-up is further available as a result of Wario being a boy. Boys have been shown to be far more likely to develop an externalizing problem than girls (Laukkanen, 2009). The presence of an externalizing problem, like the tendency to exhibit antisocial behavior, could become more prominent as Wario moves through life and could result in his deviant personality.

The role of teachers in a young child’s life can be important not only as a result of their relationship but also the message that a child receives from the teacher. This relationship is particularly important if the child has already begun showing aggressive behavior, which is relevant if Wario had already begun exhibiting externalizing problems. In a study that examined the correlation between aggressive and high-risk students’ relationships with their teachers and the presence of externalizing problems, a clear connection can be seen. A positive relationship in this situation has been shown to reduce the number of externalizing problems present in the student, while conversely a negative relationship has been shown to increase the number of these problems. But this is only relevant if
Wario’s aggressive behavior was already present at the time that he began working with the teacher. If Wario’s early teachers were dealing with him before the aggressive behavior’s onset, they would still have a great deal of influence on Wario’s temperament. Jane Elliot’s (1973) study illustrated that students who received a message from their teacher that they were somehow inferior to their classmates actually began to believe this was true. If Wario’s teachers’ words or actions somehow led him to believe he was inferior to his peers, this could easily lead to depression, externalizing problems, and aggression. Wario’s aggression, violence, and evil cannot be traced to one specific point in time with the limited information that is known about him. However, with the help of studies focused on child development, it is possible to identify certain aspects of his childhood that are most likely to be a source. Early childhood, adolescence, and teenage years are the times a personality trait is most likely to develop. And during these times, the most important aspects in determining his overall temperament are his relationships with various people. It is not solely the dynamic between Wario and his parents or the amount of similarity between him and his classmates that determines the quality of these relationships, it is also Wario’s preexisting problems and social skills that allow for positive relationships to occur. Considering Wario’s nature later in life in can be inferred that somewhere, somehow, these relationships turned in the wrong direction.
References


In 2002 a character by the name of Sid took the cartoon scene by storm. Sid, a clumsy and rather unattractive ground sloth, left to his own devices after being ditched by his family befriends a wooly mammoth, affectionately nicknamed Manny. The two soon come across a child separated from his village and (with a good deal of persuasion on the part of Sid) decide to return him to his ‘herd’.

Although the child and family are in fact reunited in a happily-ever-after, Disney kind of way, there are many points throughout the film in which it seems as though the couple has adopted Roshan (the child) as their own. It is this pattern that, in terms of human evolution, seems so strange. According to Hamilton’s (1964) theory of “inclusive fitness,” an individual’s behavior towards its relatives influences its overall genetic fitness. (Riedman, 1982) Those individuals then, should direct their attentions toward related young in hopes that they will survive to reproduce, carrying on the legacy of their own genes. If this is so, what are the benefits of caring for a child that is not your own, or for that matter, the benefits of caring for pets—animals who share almost no genes in common? Are these actions simply evolved from the obligation to care for your own young? Do humans care for the young of others because they have evolved to need to care for their own children and thus must fill the gap? Do they benefit from the relationship?—they must. What do they get out of it? This essay explores all of these questions with a focus on the role that evolution has played on the behavior itself.

In order to address the question of adoption’s origins, we must first understand how widespread the behavior has become today. Adoption or alloparental care is not found in children’s tales alone (accounts of adoption can be found in everything from movies about the Ice Age to the story of the...
Ugly Duckling). There are also documented instances of alloparental care in hundreds of animal species especially in birds and mammals.

A three-year study of the North Island Robin for example, saw the fostering and feeding of 8 fledglings by adult birds other than their parents. (Berggren, 2006) In another study, the behavior was observed in fishes—a rare, but nonetheless, likewise genuine occurrence. In this study the behavior was observed in several different kinds of fishes and at nearly every stage of brood development—from the care of eggs to that of free swimming young (Wisenden, 1999).

Today, this care for non-descendent young has even evolved past the boundaries that separate species. In the outskirts of North Attleboro, Massachusetts, a couple recorded the odd yet undeniable mothering of a growing, stray kitten by an ordinary black crow. (Ozricus) In Amsterdam, Netherlands, a tabby house cat adopted an infant red panda that had been rejected by its own mother two weeks after birth. (Associated Press) In an African game reserve a lioness adopted a baby Oryx (a kind of antelope that is a delicacy for lions in the wild). (Jabatsu) And there are hundreds more of these documented as well as undocumented contradictions of nature.

Alloparental care has been generally defined as “the care by an individual, other than the genetic parent for conspecific young” (though it is clear that the care for young of different of species is similarly relevant) and thus I will begin with an explanation of interspecies care or fostering alone. (Riedman, 1982)

With so many examples of this apparent altruistic behavior, (a behavior that benefits young at the expense of the benefactor) it should come as no surprise that there have been a good deal of proposed motives. These motives include the belief that caring for young—both related and not—provides the practice that adults need for the care of their own future young as well as the expected reciprocity (especially in behaviors like babysitting) and the presence of particular environmental conditions. While an individual motive is not the answer to all observed alloparental behavior, each will be discussed, as each has proven relevant to the evolution of the behavior in a particular animal or species.

In many species, (and mammals especially) females produce very limited offspring throughout their lifetime. While this does allow for more focus on the development of those lucky few, it also means that mothers have far less time to ‘practice’ being a mother. As the small number of offspring that are produced often require a good deal of skillful care over a long period of time, the benefits of experience in caring for children that are not their own seems rather necessary. Studies by Hrdy in 1976 and 1977 showed that primates retain a relatively high proportion of young, inexperienced alloparentents and
those who achieve prior parental experience have noticeably improved skills in dealing with their own future offspring. In another primate study, Lancaster (1971) found that because juvenile female vervet monkeys are inept at dealing with infants (much like juvenile human females) alloparenting is an essential prerequisite for the successful upbringing of imminent offspring. Observations of free-ranging rhesus macaque and chimpanzee females who likewise seem to benefit from the experience demonstrate this in other species as well. (Reidman, 1982)

Alloparental care can also be attributed to the variable food sources seen in many environments and the pack hunting styles required in the hunting of large prey. The observed actions of many terrestrial carnivores (i.e. mongooses, wolves, lions, etc.) as well as some marine carnivores, for example, have shown that alloparental care, when concerning the hunting of large prey, is extremely beneficial in that it allows more adults to put effort into the capture of food for the few who remain to look after young. In instances of unpredictable food supplies, cooperative care for young also allows for cooperative defense of the resources, thereby increasing the fitness of the group as a whole. (Riedman, 1982)

Along similar lines, when the resources that are necessary for reproduction are limited, alloparental care often arises as the best solution. In this situation, it is the oldest breeders who retain the ability to mate, leaving younger individuals to care for the offspring of others while they ‘wait their turn.’ In the case of many birds for example, it is difficult for rookie breeders to find an appropriate breeding environment in addition to an adequate mate. This is further supported by evidence that it is most commonly those birds who live in an environment with few available resources, have a long life, delayed maturity and low fertility that practice alloparental care the most frequently. (Reidman, 1982)

Although most would never admit it, in many cases fostering occurs not for the welfare of the young, but rather because the alloparents are looking to gain something for themselves—whether it be protection, attention, or simply a higher social standing. Evidence of this can bee seen in several different primate species including Japanese macaques, baboons, chimpanzees, and human langurs. In several species of baboons and macaques, for example, subordinate males will look after the infants of others in order to inhibit aggression that would otherwise be directed towards them by males of a higher social rank. Placing an infant between themselves and their superior (an act known as ‘agonistic buffering’) often allows lesser males the opportunity to interact with higher classes, thereby boosting their own social standing. While the infant receives no benefit from this act, the adult benefits greatly. (Riedman, 1982)
Another way that adults may benefit from caring for the children of others is seen in the form of babysitting reciprocity. In other words, often babysitting occurs because parents share the idea that ‘if you watch my kids, I’ll watch yours.’ This form of reciprocal altruism has been seen in groups of animals that contain young who are related to the adults as well as those without any genetic relationship. In all instances though, it appears that the babysitting behavior evolved for a single reason; females can forage with much greater efficiency if they are not simultaneously looking after young. In terms of reciprocity, if a female sacrifices a single day of foraging to look after the children of others, she knows that this will allow for several days in which she herself will be free to forage for food. (Riedman, 1982)

On the subject of alloparental care, we cannot skip a discussion of kin selection and fostering. In both cases, there is some relationship between the children and those who are caring for them, however they are not necessarily immediate offspring. While many of the explanations for unrelated alloparental care may very well be reasons for the development of kin selection the fact that there is a genetic relationship, allows us to assume that this particular behavior evolved because caring for young that are semi-related (i.e. nieces and nephews) improves evolutionary fitness at least by some small amount.

Same-species-adoption and alloparental care are rather interesting cases, however the nurturing of individuals who are not only unrelated but of an entirely different species is an even greater oddity in the evolutionary sense. Our friends Sid and Manny may not have truly adopted Roshan, however the fact that they cared for him alone goes against all obvious evolutionary explanation—as do the accounts of the crow looking after the kitten, the lionness raising the oryx, and the tabby adopting the panda. Yet pet ownership is far more common among humans than is the adoption of other humans.

People everywhere care for cats, dogs, birds, snakes and so many other animals that, superficially, add nothing to their fitness in the Darwinian style. In fact, it is often argued that animals are much like parasites, manipulating the behavior of humans in order to gain personal benefits such as food and shelter. It has been proposed that humans own pets because they are inadequate at holding relationships with other humans; however there exists little evidence in support of the theory and the behavior itself is far too widespread a phenomenon (throughout history as well as in the modern world) to be viewed simply as an abnormal response by a few inadequate individuals. So why then, do humans allow pets to sequester the resources that are so clearly meant to be spent in the raising of their own offspring?

Perhaps one of the most discussed explanations for this behavior concerns our unconscious reactions to the child-like stimuli, or ‘social releasers,’ that animals employ. In many households animals have become a sort of replacement
The Evolution of Adoption

for children. Not only do pets instill the same sense of importance that parents feel due to their child’s absolute dependence, they exhibit many of the same infant and child-like features that humans are so responsive to. In fact, there is evidence that the similarity of facial configurations between pets and infants alone drives humans to respond in a noticeably paternal manner—one that includes the ‘cooing’ and infant talk common among new parents. (Archer, 1997)

This manipulation of social releasers can be found in other cross-species relationships as well. Brood parasitism for example, is a behavior that has evolved in nearly 80 bird species and involves manipulation via a variety of devices meant to intimidate or trick a host into accepting another’s eggs or nestlings. Among many cases, reed warblers are often tricked into feeding unrelated cuckoo chicks because they are so responsive to any open beak in their nest, even if the beak itself looks nothing like one of their own chicks. (Archer, 1997) The catfish *Synodontis multipunctatus*, also uses brood parasitism to its evolutionary advantage by parasitizing families of mouthbrooding cichlids. (Wisenden, 1999) Inquilism, the permanent form of social parasitism found in the relationship between particular ant hosts and ‘inquilines’ such as the *Atemeles pubicollis* beetle is another example in which the host has been tricked (this time by several imitation pheromones) into allowing an outsider the benefits of its own labor. (Archer, 1997) It is likely that pets employ similar methods of subconscious and evolutionarily evolved ‘trickery’ in order to obtain their needs from humans.

While it is clear that when considering which species obtains an evolutionary benefit from the relationship, pets are ahead by a landslide, there is evidence of physical and mental benefits for humans as well. When compared to non-pet owners for example, those who care for pets have been found to show significantly reduced physiological risk factors for cardiovascular disease, less intense reactions to stress, fewer psychosomatic symptoms, and less visits to medical practitioners over all. Even children seem to benefit from the presence of pets in that they show comparably lower blood pressure and heart rates when asked to read aloud with a ‘friendly’ dog present. Animals may benefit more from their relationship with humans, however it is clear that they also contribute to the evolutionarily necessary health and survival of individuals by relieving the pressures of daily life. (Archer, 1997)

Hundreds of animals have made their way in to the home as pets, however none have infiltrated quite like dogs. In families with young children dogs have become companions to grow up with. In couples without children they have become substitutes for what is missing. In older households they have become replacements for those that are no longer around. Dogs are guards, rescuers, aids and if nothing else, best friends. Though people of different
ages and social circumstances rely on dogs for a wide range of reasons, it is clear that the benefits can be and are high in many situations. Perhaps most importantly, dogs seem to provide humans with a kind of absolute love (or ‘unconditional positive regard’ in the psychological style of Carl Rogers). When asked about their pet relationships, owners often comment on the fact that their pets are always there, always loving, and entirely uncritical. (Archer, 1997) It is these characteristics that make relationships with children so much fun as well. Pets, like children are fun to play with, yet still dependent in their own manner.

Alloparental care is a behavior that has arisen in hundreds of different species, from catfish to house cats and while the behavior itself seems to contradict the laws of evolutionary fitness, we have found that there are, in fact, many reasons for its emergence as a common practice in our own culture as well as that of so many other animals. Not only does alloparental care (in any form) benefit at least one of the individuals, (adult or child) it is usually, in some way advantageous for all parties involved. And so after considering all possible explanations for the act of kindness shown by the odd Ice Age couple, we see that perhaps caring for Roshan was not so strange after all.

My name’s Stephanie. I like long walks on the beach (seriously), stary skys and ultimate frisbee. I don’t know what i’ll do with my life, but I’ve got one piece of advice for anyone and everyone: travel, study the world around you, don’t get stuck locked up and focused on what’s right in front of you, the world is here for our exploration and adventures. I’ll be taking advantage of it and i hope you’ll do the same.
References


Part IV

Emotions and Decision Making
On the Origin of Emotion: Animals, Humans, and Michael Scott

August Johannsen

If you have seen the hit television show on NBC, “The Office,” you know that one of its main characters, Michael Scott, is a very emotional character. In nearly every episode, his emotions range from grief to guilt and sadness to joy. Played by the actor Steve Carell, this character is a good introduction to my discussion about emotion. Even if you have not seen “The Office,” you have certainly seen an actor of some sort performing before and can distinguish between good acting and bad. The difference lies in the ability to persuasively convince their audience that they are whoever they are pretending to be. Most of the persuasive power of acting comes from the accurate portrayal of emotions. If someone is supposed to be angry, but he does not look mad, his performance will not be convincing or engaging. I do not intend for this paper to laud Steve Carell’s superb and highly refined talent for the performing arts. I do believe that it is important to say, though, that his ability to portray a wide range of emotions is a crucial aspect that contributes much to the popularity and success of the show. This allows viewers to connect with his character and be drawn into the drama and the storyline and most importantly, watch the advertisements between the show.

As I will examine in more detail later, we are a highly social species and therefore a highly emotional species. We can easily pick up emotional cues from other humans, especially our close friends and relatives, but also from people we have never seen or met before. We can also pick up many cues from animals. This suggests that emotion is a universal characteristic between both
humans and the “lower” animals. In this paper, I will provide a brief overview of emotion, first by explaining what an emotion is, then the phylogeny of emotion and its evolution in animals, and finally, emotion in humans.

What is an Emotion?

Some people view the body as a sort of machine. In some sense, this view is correct. Our joints act like hinges, our muscles like motors, and our brain like the computer that supervises and controls the rest of the machine. Just as a computer has an operating system and programs that complete particular tasks, so too does the brain. Carrying this analogy further, there are some programs in computers that, if run simultaneously, would counteract each other and cause a malfunction. Therefore, some programs must be able to override others to prevent this from happening. Consider the popular digital music player, the iPod. In an iPod, a program automatically shuts it off when its battery charge drops too low. This overrides the program that keeps it operating when not specifically turned off by the operator. In humans, though, the emotions have this job of making sure the “computer” stays functional.

Emotions are superordinate programs whose function is to direct the activities and interactions of the subprograms governing physiology, psychology, and behavior in ways that increase the organism’s fitness (Cosmides and Tooby, 2000; Nesse and Ellsworth, 2009). Scherer (2005) specifically lists the subprograms, or, as he calls them, components: cognition (appraisal of the situation), neurophysiology (bodily symptoms), motivation (action), motor expression (facial and vocal expression), subjective feeling (the abstract emotional experience). A brief example: when an organism experiences the emotion of fear, among other responses, its senses will sharpen and it will channel energy towards finding an escape route. These responses provide a fitness advantage because they help the organism avoid death or injury so it can escape and eventually reproduce. Fear, just as any emotion, will also suppress other programs; the organism no longer worries about being hungry, or how to find a mate. The emotional corollary to the previous iPod example could be depression or exhaustion, depending on whether the “battery power” is motivation to work towards a goal or physical energy.

There is much debate on exactly how many emotions actually exist. Some theories claim there are just two: approach and avoidance, or pleasure and pain. Others suggest a nearly infinite number. All theories, though, agree that valence and intensity are crucial aspects to emotion (Smith and Ellsworth, 1985). Furthermore, all theories of basic emotions include fear and anger, and usually joy and sorrow (Nesse and Ellsworth, 2009). Depending on the con-
text and intensity of the psychological response, though, different emotions could occur because the characteristics of situations and patterns of response overlap. Unfortunately, it is difficult to pin down exactly how many emotions there are because they do not exist for specific reasons, unlike the analogy of emotions as explicitly designed computer programs. Thus, though vague and unclear, it must suffice to say that, “one emotion has many functions, and any given function is served by many emotions” (Nesse and Ellsworth, 2009).

The Evolutionary Origins and Functions of Emotion

The search for the evolutionary origins of emotion began around the same time as the search for the origin of species. Incidentally, it was Charles Darwin himself that, in 1872, published an influential book on the expression of the emotions in man and animals titled, *The Expression of the Emotions in Man and Animals*. Though this book mostly focuses on the expression of emotion in man and animals, Darwin noticed the phylogenetic similarities between animals and man. He saw that emotion was common to most animals and therefore must have evolved in a common ancestor long, long ago. He was unable to go into very much depth about this inference, though, because he lacked the tools and data that are available to modern evolutionary biologists and psychologists.

Darwin laid out three principles to explain why emotions occur: habit, antithesis, and direct action of the nervous system. In other words, emotions are simply a matter of instinct and reflex. He uses several examples, but especially the emotion of surprise in humans. Adults, Darwin asserts, always blink when presented with a sudden auditory stimuli, whereas infants under a certain age do not. Once the infants are a little older, they suddenly begin to blink, though they obviously did not learn this behavior. Therefore, according to Darwin, the emotion of surprise is an instinctual behavior, learned by our species over evolutionary time to protect ourselves from sudden, unexpected dangers (Darwin 39).

The point Darwin made, though rough and incomplete, is the basis for the current thought about the evolution of emotion. As previously stated, an emotion is a series of coordinated responses to an outside stimulus that increases an organism’s fitness. Therefore, emotions are adaptive and subject to natural selection. This presumes that situations which warrant emotional responses occurred and reoccurred often enough for the species on the level of the individual, that there were recognizable cues signaling their presence, and that an error in response would have resulted in large fitness costs (Cosmides and Tooby, 2000). It is impossible to tell which animal or animals first evolved
emotions, but since emotion is so widespread, it is safe to say that it evolved in a very early ancestor, one common to almost every species of animal alive today, especially the most basic emotions of fear and anger.

Emotion in Animals

It is easiest to see emotion in social mammals and they, therefore, are most often studied in research on animal emotion. One reason for this is that we evolved from lower mammals and therefore our emotions likely evolved the same as the animal being studied, which allows us to recognize to some degree our common emotions. To prevent the cardinal sin of scientific study of non-humans, anthropomorphism, many evolutionary psychologists or animal behaviorists reject this claim, even though it seems obvious, on the grounds that animals may show behavior that seems emotional, but they do not have the mental awareness to actually experience true emotions (Masson and McCarthy xviii - xx). Darwin, though, often used anthropomorphic language when describing emotions of animals. For example, his dog would look very dejected if they took the wrong path on a walk, which Darwin found “laughable.” Darwin made good observations on the expressions of emotions in certain “well-known animals” though, especially in the similarities between them, despite his anthropomorphic tendencies.

One aspect he wrote about was vocalization as a means of expressing emotion. A rabbit will not “speak” unless subjected to extreme suffering, such as when it is caught by a stoat (Darwin 83). Similarly, a cow or horse will only vocalize under extreme pain and terror. Darwin suggests that vocalization might have arisen from involuntary, purposeless contractions of the chest and throat muscles, which began to serve a purpose and later came to be consciously controlled by the animal. The “fight or flight” response could also have triggered the contractions, as muscles tend to contract and harden when enraged or terrified (Darwin 85). Darwin notes that social animals use their voices much more frequently and purposefully than others do, which indicates that the voice became a method of communication, rather than just a cry of pain and terror.

There is much scientific evidence that social species have a richer variety and more subtle emotions than do more solitary species (Cosmides and Tooby, 2000; Bekoff and Goodall 45). There are several reasons for this. Since social animals cooperate and depend on each other, it is useful to communicate emotions, especially ones that indicate danger. For example, free-living vervet monkeys have different alarm calls for different types of predators (Dawkins 5). With their social behavior, it became a benefit for them to develop special-
ized responses to different dangers. Thus, instead of one alarm call, the vervet monkeys have three very distinct alarm calls, and each stimulate a very distinct reaction. This subtle discrimination between slightly different emotions can only be found in social animals.

**Emotion in Humans**

Thus far, I acknowledge, my paper has had little or nothing to do with Michael Scott of “The Office.” However, without understanding the background and evolutionary history of emotion in animals, we could never understand the rich emotional palette of this character. In this section, I will examine the origins of emotion in humans specifically, and how they apply to Michael Scott.

Again, as stated above, emotion is an adaptive response. It evolved, and evolves, because the accuracy of an individual’s emotional activation influences reproductive fitness. As Ellsworth and Nesse (2009) write, emotions would not exist unless they were useful and provided a fitness advantage. Emotions help us classify and organize our sensations of the world so we are able to properly coordinate our reactions to provide a fitness advantage. Some emotions seem out-of-place and contradictory to what they should be though, such as Michael Scott’s overwhelming need to be popular and admired, his fear of solitude. This would seem to be maladaptive because he simply ends up being annoying and liked even less after his flawed, often highly offensive, attempts at humor and trying to be part of the “in-crowd.” This behavior is, though, in fact, based on an adaptive response though, just exaggerated and over-done.

Michael Scott’s seemingly irrational behavior may not be well-designed for the world he lives in, but the functional logic behind the behavior is most likely well-designed for the world his ancestors lived in (Cosmides and Tooby, 2000). In ancestral time, the emotion of solitude and the need to feel welcome was very important to staying alive because humans were, and still are, an extremely social species. If an individual got cut off from his tribe for whatever reason and he was without the social aid, he would most likely die quite quickly (Long, 2003). Furthermore, Michael’s desire to be part of the “in-crowd,” has an ancestral explanation. By advertising one’s membership in a certain group, there were often substantive rewards, such as, perhaps, assistance with hunting or protection from other groups (Fessler, 2003).

This principle of ancestral, or phylogenetic, explanation also illuminates why we are more likely to be afraid of snakes or spiders rather than planes or cars.
Even though many more people die in plane crashes and car accidents than spider or snakebites, cars and planes have only been around for about one hundred years whereas snakes and spiders have threatened our species for millions. Only a few generations have passed since this new danger appeared, whereas the danger of snakes and spiders has been constant for millions of generations. We are therefore naturally selected to fear snakes and spiders more because they consistently presented our species with danger over evolutionary time spans.

A further explanation for Michael Scott’s irrational attention-seeking behavior is the “smoke detector principle.” There are certain situations that often elicit seemingly useless emotions. Consider, for instance, that you are passing a bush that might harbor a predator. If the caloric cost of a false alarm is low and the cost of not panicking if there is real danger is high, then it is normal, beneficial, and expected that many false alarms will occur (Nesse and Ellsworth 2009). If the false alarm cost is 300 units, and the non-alarm cost is 300,000 units, then any chance greater than 1 in 1000 will trigger an alarm. In Michael Scott’s case, the costs of perhaps seeming like a fool highly outweigh the costs of “losing” his “friends” in the office.

Game theory also provides some insight into Michael Scott’s behavior. In several episodes, he suddenly explodes with anger, especially in the episode when Toby, the Human Resources manager, returns from an extended vacation. Toby is perceived as a pest and a nuisance because he often presents Michael with a logical reason why something stupid should not be done. Michael takes this as an affront to his authority and sociability and gets very frustrated with Toby. Brams (1995) suggests that pent up frustration in decision-making causes an anger outburst. This study found that when someone feels helpless, such as Michael does with the much more sensible Toby, he or she often lashes out in explosive anger and aggression. This emotional response was shown through a series of games in which participants received poor outcomes from the other player. This felt very unfair to the participants and, in some sense, like cheating. The anger they felt was an ancestral adaptation to maintain social cohesiveness. By lashing out with a fierce emotional overreaction, the participants were trying to promote prosocial behavior through raising the costs of antisocial behavior (Fessler, 2003). In other words, the participants were trying to maintain sociability by punishing the other person into discontinuing their cheating behavior (Pagel 297).

On the opposite side of the emotional spectrum, but meant to fulfill the same general purpose, lay guilt and shame. These two emotions seem to be almost exclusively human. Whereas aggression and anger towards social loafers or cheaters is also seen in the animal kingdom all the time (when animals cheat and steal food while eating a kill for instance), it seems guilt is a product of
human culture (Pagel 298; Côté and Poulin, 1995). Guilt and shame evolved to encourage humans to prevent themselves from damaging social bonds by breaking norms and, if they did damage these relationships, work to repair them. If these emotions were biological in nature though, those that can cheat without being caught should be favored, yet we feel guilty even if we are not caught (perhaps even more so sometimes). According to strict survival-of-the-fittest doctrine, a more “Machiavellian approach to norms” is better (Fessler, 2003). Only conforming to norms when the benefits outweigh the costs is more logical for the individual, but there are cognitive constraints preventing this that cause us to feel guilt and shame when we breach norms. This indicates a heavy cultural influence, as further supported by the absence of universal facial and other expressions of guilt (Pagel 298; Fessler, 2003).

Michael Scott is, I think, the perfect realization of human emotional evolution. His audience can see every emotion that he experiences (and he experiences several every episode!). Being an extremely social and generally cooperative species, it was important for human ancestors to be able to read the emotions off other individuals’ faces, whether they are kin or not. Our ability to accurately read other’s emotional states led to more nuanced emotional signals. This is why we, today, are able to easily connect emotionally with fictional characters such as Michael Scott, even through the television screen, because we are able to instantly see and recognize his emotions. Thus, from simple physiological responses our ancestors developed psychological and behavioral analogues to coordinate our bodies and provide fitness advantages. From there, culture took over and added morality and other emotions that help preserve our social cohesiveness.

Emotions are a crucial part of who we are as a species. It is arguable that without them, social behavior would be impossible and our species would have gone extinct long ago. Michael Scott’s rich emotional palette is the result of millions of years of complex physiological, psychological, and behavioral evolution that we have only just recently begun to even come close to understanding. Our path to a total comprehension of emotion will be long and hard. “That’s what she said” (Michael Scott).

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References


In his 1958 novel Things Fall Apart, Nigerian author Chinua Achebe uses his main character Okonkwo to outline one of humanity’s most fundamental emotions: guilt. Okonkwo, a wealthy and respected man, commits the demoralizing sin of murdering the boy he spent several years raising as his son, all in an attempt to prove his bravery to his fellow clansmen. Immediately beset with depression, he furthers his troubles by accidentally killing the son of one of his closest friends. Completely broken down by his wrongdoings, he exiles himself and his family as punishment. After seven years of such atonement, Okonkwo feels reconciled and returns to village, only to find it dominated by white Christian missionaries looking to convert his tribe. In a fit of rage, he slays a missionary messenger in hopes of stimulating an uprising to drive out the whites, but receives no support from the clan. In utter despair, Okonkwo is no longer able to handle the misery and guilt of his actions and hangs himself.

Guilt, the driving force behind Okonkwo’s self-punishment and eventual suicide, seems more than natural to the reader. While the level to which he feels guilty is greater than what the common person is used to, his actions are understandable nonetheless. The important question of this essay, however, is not how Okonkwo deals with his guilt, but rather why he feels guilty in the first place. Common sense makes the answer to this question obvious: he feels guilty because he did something wrong. He hurt people that did not need to be harmed and consequently feels bad about it. But did he really do something wrong? According to nearly every subjective system of morality, yes he
Guilt as we know it is not a universal emotion; it is thoroughly ingrained in the human mind but not in the minds of every animal. While a human may feel guilty about something simple like forgetting a friend’s birthday or losing a borrowed book, some female preying mantises will devour her mate immediately after mating, and male bottlenose dolphins will work together and force a female into sex, two unthinkably atrocious crimes if done in the human world (Ridley, 162). This human guilt, therefore, must come from a unique feature in our genome that is not found in the genome of preying mantises or bottlenose dolphins. In other words, like any trait specific to our species not directly found in our ancestors, guilt evolved.

Just by looking at Charles Darwin’s basic explanation of evolution, this concept raises questions. Simply put, the goal of any single creature’s existence is to pass on its genes to the next generation. And to do so, it must attain two forms of fitness: physical fitness that allows it to live long enough to reproduce, and sexual fitness that allows it to actually reproduce successfully. According to Darwin, a genetic mutation that increases either of these types of fitness will be beneficial to the individual, and evolution occurs when that beneficial mutation is selected into the genome and passed on to the offspring. So why then did guilt evolve in the first place? Feeling guilty about forgetting a friend’s birthday seems hardly essential to one’s physical or sexual fitness, and it most likely is. But regardless, the fact that we express the emotion means that it must have initially risen as a genetic mutation that somehow benefited the fitness of a human individual. We must look very far back in human history to find this moment, to the time of the development of a behavioral phenomenon known as reciprocal altruism.

American evolutionary biologist Robert Trivers pioneered this notion of reciprocal altruism in 1971, defining it as “any behavior that benefits another organism, not closely related, while being apparently detrimental to the organism performing the behavior”. The basic display of altruistic behavior he gives is a man endangering himself by leaping into water to save another distantly related, drowning person. This definition has two key phrases that are essential to its understanding: not closely related and apparently detrimental. First, the organism benefiting from the behavior must be distantly related to the actor, because if the two were closely related like son and mother, the action would be easily explained as the mother trying to save her own genes present in the son. Instances like this fall under the term “kin-selection”, another topic entirely in which the genetic closeness of two individuals determines the altruism between them. Second, the action must be apparently detrimental, or seemingly harmful in the short run. It is important to under-
stand that such an action that seems immediately dangerous may turn out to be quite beneficial in the long run. This is what makes reciprocally altruistic actions evolutionarily justifiable. “Detrimentally” choosing to help a distantly related person may not immediately increase one’s physical or sexual fitness, but rather establish a situation in the long run that will.

Ridley (1996) explains in *The Origins of Virtue* what he believes to be the first instance of this reciprocal altruism. Tens of thousands of years ago much of the world was dominated by vast grasslands, harboring large herbivores like mammoths, elephants, and giraffes. At the same time, humans developed the weaponry to hunt and kill these animals for food. However, a problem arises when an animal with hundreds of pounds of meat is killed by a much smaller human. He may kill the giraffe, but with no refrigeration or preservation methods, its meat can either be eaten quickly or left to rot. Therefore it might as well be shared with others in the hunter’s group, people who took no part in the hunt, people who will unequally benefit from the hunter’s work. This is a classic free-rider problem, and in this case it is unavoidable.

It is obvious why someone would refrain from hunting altogether. All one has to do is be a free-rider, waiting for someone else to make a big-game kill and scavenge meat from that. But if this is the case, why does anyone hunt? Furthermore, if someone does hunt, why does he take the time to hunt a giraffe that will produce such a surplus of meat? A much safer and quicker alternative would be to hunt a larger number of small-game animals, feeding himself and his family just the same. The answer is that he has much more to gain in the long run from hunting the giraffe and then participating in reciprocal altruism with others. By sharing his kill, he is not gaining more food for himself or his family, but rather gaining social incentives that will pay off later in life. Others will see him as strong, productive, and most importantly generous, in turn lending him an altruistic hand next time they have surplus wealth to share.

This is the evolutionary incentive for reciprocal altruism, explaining why it evolved into the human behavioral system. Furthermore, the anecdote perfectly follows Trivers’s definition made 35 years earlier. A hunter performs an action that may be harmful to himself and his family (hunting big game instead of small game) that benefits distantly related others (his fellow clansmen). And he did it because his hunting was apparently detrimental in the short run, but socially beneficial in the long run, earning him prestige and the opportunity for future generosity. Keep in mind that social prestige could easily be translated into both physical and sexual fitness, earning the hunter sustenance and possible mating with an impressed female. Therefore, the gene that stimulated this reciprocal altruism will undoubtedly evolve into the human genome and be passed on to aid future generations. Aside from food
sharing, other common examples of this altruism in early humans included helping the elderly or sick, helping another in times of danger, and sharing knowledge.

Establishing this reciprocal altruism as a fundamental behavior between two interacting humans, Trivers derives the role of emotions. Founded on past experiences, they determine when a person chooses to act altruistically. They influence behavior in two ways: directly by motivating action, and indirectly by anticipating others’ emotional reactions (Fessler and Haley, 2003). One example of this is gratitude, which arises when one’s actions require effort and inconvenience, thus influencing the beneficiary to try to reciprocate that altruism at a later time. Resentment, on the other hand, occurs when altruism is clearly performed for personal benefit, only intended to force the receiver into future generosity. This, consequently, will influence the recipient to not return the favor.

Like these examples of gratitude and resentment, guilt is also an emotion that emerges from altruistic situations. However, it does not stem from a standard reciprocal relationship, but rather one in which a person cheats. If this cheating is discovered by the partner, he or she will understandably respond by cutting off future generosity. There is no reason to continue altruism without reciprocity. Guilt evolved here as a reparative emotion, serving two basic purposes that work hand in hand to restore altruism. The first is outward, conveying to the partner that the cheater does not intend to take advantage of another situation. The only way the partner will choose to invest any effort in future altruism is if he or she is confident that the cheating will not happen again. Guilt’s second purpose works inward, motivating the cheater to compensate the offense and reform his or her ways. Ultimately, any intentional or unintentional transgression will lead to this guilt (Krebs, 267).

Looking back on the literary anecdote from the beginning of this essay, this understanding of guilt makes clear Okonkwo’s depression and self-punishment from a behavioral perspective. His existence in the clan was nothing more than a large network of reciprocal altruism between himself and the other clansmen. Together they took part in many communally altruistic tasks, such as tending to each other, protecting each other in times of conflict, and sharing resources. Killing the innocent boy, although incidental, was Okonkwo “cheating” in this reciprocal relationship. In reaction, the community no longer wanted to expend its altruism on someone harming the clan’s cohesiveness. Guilt struck Okonkwo and was manifested in his seven year exile, perfectly showing its two purposes as outlined in the previous paragraph. Outwardly, it conveyed to the clansmen that Okonkwo does not intend to “cheat” on the community’s reciprocal relationship again. And inwardly, it motivates Okonkwo himself to refrain from future cheating by experiencing
the pains caused by it. The author Chinua Achebe, no expert on evolutionary biology or reciprocal altruism, succeeded in telling a fictional story that perfectly follows the guidelines of guilt as set out by the field’s pioneer, Robert Trivers.

However, concrete evidence for the theories of reciprocal altruism and guilt cannot be pulled from fictional tales like *Things Fall Apart*. While the novel might provide a good model, like any scientific theory they must undergo real-world tests to be validated. Luckily, psychologists and evolutionary biologists have conducted experiments that place subjects in free-rider dilemmas and other situations that require reciprocal altruism for long-run profits. By monitoring a subject’s actions when faced with a guilt-causing alternative, or after a guilt-causing choice has been made, they find the extraordinary power that the emotion has in decision-making.

One such experiment by Price, Curry, and Price (2005) created a “voluntary contribution mechanism” in which four players were given ten tokens each, and could donate any of those tokens to a public fund. Whatever was allocated to that fund was then doubled and redistributed to the players. The following free-riding social dilemma occurs: players could help the group as a whole by donating more of their tokens, or help only themselves by withholding donations and instead receiving what is redistributed. To study guilt in this particular public goods game, Price, Curry, and Price examine what they call “guilt-proneness”, or how likely a player is to experience guilt from a given decision. They found two important trends: that high levels of this guilt-proneness led to more generosity, and that players would experience more guilt if they discovered they were the lowest contributor to the public fund. Understanding the negative repercussions of their actions, they responded to this guilt with larger donations. In the end, these findings match that of Trivers: “guilt functions to help individuals maintain relationships and to make them more attractive cooperative partners to others”.

Another study by Ketelaar and Au (2003) took a slightly different approach to the same question. They conducted two experiments, both placing their subjects in classic situations that require cooperation and altruism to benefit the whole. The first was the “prisoner’s dilemma”, in which two individuals have the option to either cooperate with or defect on the other. The most communally beneficial option is always for both players to cooperate, however, if one defects while the other cooperates, the defector will gain more than he or she would have by cooperating. Both subjects therefore always have the personal incentive to act uncooperatively and defect, an action that also triggers guilt in the defector. But after repeating the game multiple times, Ketelaar and Au find that subjects who defected early were more likely to cooperate later, regardless of their partner’s decision or the fact that they are reducing their
potential short term profits by doing so. Again in this social situation, guilt powered the individual to act more generously, hoping to repair the reciprocal relationship in which he or she cheated.

The study’s second experiment involved the “ultimatum game”, a situation in which two subjects are given a sum of money, in this case 19 dollars, and told to split it between the two in whole dollar increments. One person offers an ultimatum, say $13–$6, and the other chooses to either accept (act cooperatively) or defect (act selfishly). Since there is no way of evenly splitting the money, any ultimatum will be slightly selfish or slightly generous. In other words, there can be no completely reciprocal relationship. Therefore, the unavoidable selfishness in an offer will generate guilt in the one who receives more money because he or she does not want to appear as always selfish or always trying to steal from the relationship. So when the situation was repeated a week later with the same individuals, it is not surprising that over 90 percent of those that felt guilty about making a selfish offer earlier now made generous offers to their partners. Again, guilt worked to mend a situation that was unequal in the short run so that it could be fully reciprocal in the long run.

Ultimately, these three studies display the innate power and influence of guilt in social situations. Evolving in humans from our relationships that require reciprocal altruism, guilt repairs those that are not fully mutual, and reinvigorates trust between one another. Whether it be in a communal setting (Price, Curry, and Price), or when defection hurts one’s short-term profits (Ketelaar and Au #1), or even over extended periods of time when short-term decisions will be unavoidably unequal (Ketelaar and Au #2), the emotion of guilt will display one’s desire to prove his or her worth in future reciprocal situations. Just as Okonkwo looks to regain social prestige and the trust of his clan after his brutal crimes, and human subjects in studies look to restore altruism after defecting on a partner, guilt is an established part of our genome that evolved to enhance the human relationships that guide our long run fitness and prosperity.

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References


So often men are held back from potential transgressions not by the fear of legal repercussions, but by laws enforced within themselves. Society restricts the criminal who is caught, but guilt restrains him before he ever commits the crime, and impels him to confess once he has done so. In his aptly named tale of *Crime and Punishment*, Fyodor Dostoevsky writes of a man, Raskolnikov, who commits a crime, and duly suffers. As the analytical reader will notice, however, his true punishment comes not from the police, nor the prison, but rather from within; it comes from an innate feeling of guilt that afflicts and rewards us all, and discourages the pursuit of seemingly selfish acts.

Through Raskolnikov Dostoevsky develops the idea of the “Extraordinary Man,” an individual who through unyielding self-centeredness takes advantage of the virtue of others, and transgresses the laws of society to bolster himself and best all the rest. This theory, later conceptualized by Hegel and Nietzsche, has led to a long-contemplated, philosophical question of whether or not such a man could exist. One can certainly cite famous and infamous examples of such men throughout history: Napoleon, Hitler, Julius Caesar. Still these cases are rare and contain an air of historical complexity and retrospective partisanship that makes them difficult to explore as case studies. Perhaps it is better to explore this question not from a philosophical standpoint, but rather from that of evolutionary science.

Dostoevsky illustrates that Raskolnikov is ultimately inhibited by his inability to cope with guilt and remorse. He concludes that such emotions are spiritual road signs from God, aimed to send him towards repentance and renewal. Scientifically, it seems prudent to conclude otherwise.
While intrinsically unscientific, it almost seems logical at first to attribute the development of moral emotions such as guilt and shame, not to natural selection, but to the works of a higher power. For, at first glance such emotions appear to be psychological “road blocks” that keep the individual from making “rational” self-interested choices, and any evolutionary scientist will tell you that natural selection always develops attributes in the individual that will promote his or her own self interest. Yet, in fact, the opposite is true. While individuals who make moral emotion-based decisions may be sacrificing immediate benefits, they often in the long run reap even greater rewards (Ridely, 1996). Studies on patients who have lesions in the emotional centers of their brains have found that while they are completely capable of making complex rational decisions, these individuals are often unable to identify and focus on what would consider the most pressing task at hand (Frank, 2004). Rather than being road blocks it seems that moral emotions are a compass guiding the individual around the pitfalls of immediate gratification towards the actions that will in the long run do the most good (Frank, 2004). To what may be the dismay of all the Dostoevskians out there, it now seems most logical to attribute the existence of guilt not to God, but rather to his newfound “archrival,” natural selection.

Should we, however, give natural selection all the credit? If guilt has truly been designed to guide individuals to the best decision in complex societal interactions, then it can be assumed that it did not begin to develop until such sociality existed. Thus, the evolution of guilt must be tied up in the evolution of society, the development of each being somewhat reliant on the other. While many other species live in societies, not one of them is as complex as that of humans. While one need only look to one’s house pet to find proof of basic emotions, such as fear, anger, and happiness, they will find higher emotions, such as guilt, shame, and romantic jealousy exclusively in human beings (Linquist, 2008). It stands to reason then that without a complex society to nurture them, higher emotions will not develop in an individual. That is not say, however, that the computational hardware for the development of such emotions would not exist in the absence of society. The answer to the development of higher emotion is something called “dual inheritance.”

Dual inheritance is the theory that much of complex human behavior and emotion is developed not exclusively through nature or nurture, but through a combination of the two. A recent study done on the development of young children provides some proof and insight into this idea. The study found that when infants as young as two years old observe anxiety or stress in others, they tend to feel the same emotion, which in turn leads them to express many prosocial behaviors such as hugs, kisses, and pats “in an apparent attempt to alleviate their shared anxiety” (Linquist, 2008). Furthermore, toddlers’ levels of anxiety and the amount of prosociality they express are said to be particu-
larly affected when a child believes that he or she has directly been the cause of another’s distress, as opposed to having simply just seen its occurrence (Linquist, 2008). Such behavior can be viewed as a precursor to the development of guilt, but does not qualify as completely mature guilt. It is not until around three or four that children are actually able to verbally articulate a connection between their actions towards others and undesirable feelings within themselves. It is still not until even later that they are able to grasp an understanding of societal norms in a way that will allow them to anticipate and avoid behaviors that will cause them to feel badly (Linquist, 2008). Thus the development of guilt can be seen as a “multi-stage process” beginning with a toddler’s predisposition towards feeling empathetic anxiety, and ending with his understanding of which societal transgressions will make him or her suffer such anxiety. While one is born with the hardware to develop guilt, one comes only to fully understand it through culture—through one’s parents largely, but also through one’s peers, and the surrounding society. It is a process of both nature and nurture. Now we can return to the question at large.

As guilt is somewhat a product of culture as well as natural selection, then could it be possible for one to cast aside the teachings of society, break the social norms, and pursue the status of the Extraordinary Man? The former two are certainly possible. We humans cast aside feelings of guilt all the time. The boy who takes more than one taste from the local candy store; the woman who cuts in line because she really has to go; the impoverished, Russian, ex-student who kills an old pawn broker to steal the riches she hoards: All these people acted “against their better judgment,” cast aside their guilt, transgressed, and they all benefitted (or at least could have) in some way from their actions. But if casting aside guilt usually leads to benefits, then why not ignore it all the time and become extraordinary? To answer this question one must first observe and analyze what happens when an individual chooses to ignore his or her guilty feelings.

In 2003, a team of behavioral scientists did just that thing. In their study, sixty-four individuals were placed into a social bargaining game known as a prisoner’s dilemma. In this prisoner’s dilemma simulation individuals were faced with the classic options of cooperation or defection, where one receives the largest payoff if one defects and the partner cooperates. A one-shot interaction of this type of game usually leads to mutual defection by both parties, whereas both would have been better off had they decided to cooperate. Thus, over repeated interactions it is “irrational” cooperation that tends to give the largest payout (Ridely, 1996). The individuals in this study were first tested against a computer (that they thought was another human), then categorized into being either “uncooperative” or “cooperative” types, and then asked to take ten minutes to write a small paper on the last time they felt “guilty,
shameful, or self-blaming.” The purpose of the paper was to incite guilty feel-
ings in the subjects. When asked to play another series of games, the percent-
age of times subjects chose to cooperate increased significantly (specifically
in the uncooperative type), even when the computer was playing an unco-
operative strategy against them (Ketelaar, 2003). Assuming that most would
consider noncooperation to be an immoral strategy, the results of this study
illustrate why most humans do not constantly defect and refuse to acknowled-
edge feelings of guilt. The “uncooperative” players who felt and responded
to their feelings of guilt all ended up playing significantly more cooperatively
in later games (Ketelaar, 2003). As cooperation is usually the best strategy in
a prisoner’s dilemma with long-term interaction, it can be assumed that guilt
was pushing these individuals to adopt the strategy that would bring them
the most long-term benefits. So, because guilt is built into our systems just
the way a pair of lungs are, it benefits us no more to start constantly ignoring
guilt than it does for us to choose to stop breathing. Guilt is here for a reason,
and while it would be unwise to blindly follow it all the time, it is equally
unwise to consistently cast it aside.

Just because in our society constant defection is not always the best choice
does not necessarily mean that the Extraordinary Man could not exist. Soci-
eity as we know it now is an optimality vacuum, full of distinct and varying
situations in which one strategy cannot always prevail. Even if every situation
could be simplified down to a prisoner’s dilemma, one strategy could never
always win out. In 1979 scientists thought that they had found an unbeatable
prisoner’s dilemma computer program that followed a strategy most are fa-
miliar with these days known as “tit-for-tat” (Ridely, 1996). In a tournament
consisting of repeated interactions between computer programs, tit-for-tat fol-
lowed the simple rule of initiating cooperation and then just doing whatever
the other guy did last time (Ridely, 1996). However, as later realized, tit-for-tat
never wins out in a one-shot interaction against a constant defector, thus such
a strategy would never bring constant success in the real world which is full
of both long term and short term interaction. In fact, as repeated computer
simulations would show, according to the world the way it is now, there is no
stable conclusion to the prisoner’s dilemma game (Ridely, 1996). Once again
I must state, this does not mean that the Extraordinary Man could not thrive
given the correct arena. While an unchanging strategy (such as constant de-
fection) could never win out in the world as we know it today, theoretically, if
a man (or woman) were extraordinary enough, he could warp the social fabric
of the world and create a society in which constant defection was always the
best strategy. If there was a man so extraordinary, then in such a world he
could certainly thrive and rise to the top. While this conclusion may seem
outrageous at first, consider that many theorists have suggested that this sort
of social order may be developing at just this moment.
It is clear to most that anonymity plays a large role in whether or not one will commit any certain transgression. This fact could explain another reason why it is not uncommon for humans to ignore the moral guidance that guilt provides them with. Like most species, before around 100,000 years ago most of human interaction consisted of one-shot interactions. In a world of constant anonymity such as that, there was no need for an emotion such as guilt; however, once society started to develop, everything changed. It is hypothesized that the first human societies were incredibly close-knit where there was almost no anonymity whatsoever. Thus, guilt evolved biologically and culturally to deter humans from transgressing in a world where reputation was more important than immediate satisfaction. Ironically, however, the development of large cities and global networking today has made it much easier for a person to thrive while preferring defection to cooperation. It is not surprising that there is significantly more crime in large cities than in the average suburban neighborhood. The urban world lacks the relative propinquity that is present in a neighborhood, family, or tribe, and the invention of the Internet has transferred this anonymity worldwide. Thus it may be that while guilt certainly played an important role in early human societies, it is now “misfiring” in a world where avarice is more important than morality.

Some proof for the importance of non-anonymity in inciting moral versus amoral decisions stems from research on the psychological effects of subconscious perception. A 2006 study measured the effect that pictures of eyes had on the contribution level of office workers paying for drinks using an honesty box. The picture above the box was varied between eyes and flowers weekly. When eyes were present the subjects paid on average three times more than when the control picture was present (Bateson et al. 2006). A similar 2005 study showed that in a give versus hoard money experiment, subjects were about 30% more likely to give away money to another when in the presence of eyespots, even though they were all under the same level of anonymity (Haley et al. 2005). This illustrates that even on a subconscious level our brains react very strongly to a lack of anonymity. This may prove that the influence of guilt is largely subject to whether or not one is being watched, which in turn may indicate that over time, in the face of repeated and expected anonymity, guilt could become less and less influential on the individual. Under this assumption it is quite possible that further globalization and urbanization will lead to increased anonymity and that humanity will inevitably become more self-interested with time. In this hypothetical world the Extraordinary Man would could not only exist, but also thrive as well. Of course, as of now this is all just conjecture, but considering this hypothesis, it may be quite prudent for the pessimist to consider adopting constant defection as a new social strategy.

For the optimist, however, there is plenty of hope. While it is certainly possible for the Extraordinary Man’s world to develop in the near future, I believe
it is much more likely that society will move in the opposite direction. Con- sider this dilemma from an economical standpoint for a moment. Does not guilt lead us to create an optimal moral system? We have already proven that a mutual moral attitude leads to superior profit for both parties in a prisoner’s dilemma, and studies portray that the same is true for most of society’s interactions. Sociologists seeking to create an optimal social system created a design in 2007 in which moral emotions were paired with acts to “induce behavior that fosters social welfare” (Kaplow et al. 2007). Guilt played an essential role in their plan. While much of the study’s research is steeped in complicated mathematics, they come to some important (and relatively easier to understand) conclusions. The scientists note how institutions trying to promote social welfare rely on guilt as a natural deterrent to free riders or defectors (Kaplow et al. 2007). Imagine how difficult it would be to collect taxes or run a legal system in the absence of guilt. Guilt is ingrained not only in our nature and social order, but in our legal systems as well. Details may vary throughout different cultural niches, but for the most part humans denounce the type of self-serving behavior that guilt is designed to deter us from. Humans venerate morality cross-culturally, and thus it stands to reason that we should venerate guilt as well. Guilt would not permeate our culture so deeply if it did not serve a vitally important role for our success. So why ignore guilt in an effort to succeed, when the tools for success are already built into the human system? Not only is the pursuit of “Extraordinary” status morally dissatisfying, but also nonsensical as well.

Although it is unscientific to assume that our society is somehow “better” than that of the ape or baboon, I think most would agree that it is definitely preferable. Miraculously, natural selection has evolved us beyond the standard of pure self-interest. While we may still be following the guidance of the selfish gene within, humans have found a way to better themselves through the bettering of others. We have somehow become selfishly unselfish, and it seems illogical to me that anyone would desire to move us in the opposite direction when such altruism has brought us to the pinnacle societal success that we have the privilege of thriving in today.

The question now remains, while it is undoubtedly possible for one to constantly defect in today’s society, will such behavior lead one to become “Extraordinary”? Modern society remains an entity of situational and indefinite circumstances in which neither constant adherence to guilt nor constant ignorance of it is optimal. While Hitler, Napoleon, and Caesar could all be considered extraordinary men, they probably rose to this status due to their own political prowess, not through some quasi-supernatural ability to warp the fabric of an entire society. A nasty individual who pursues only immediate self-interest is no more extraordinary than the blind altruist who constantly
The Impossibly Extraordinary Man

Ross Perry

gets taken advantage of by the former. Just as Dostoevsky concluded years ago, it seems that there is no place for the Extraordinary Man in this world. No place for constant defection. No place for always taking without ever giving back. No place for the rational fool.

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References


Despite what we like to believe, few of us are indifferent to the success of others, for when there is a winner; there must also be a loser. The irony is that even as we envy the successful, we take satisfaction at the misfortune of others. Competition stimulates envy and resentment in the loser, who copes to deal with ultimate failure, even as the winner gloats in his victory. This pleasure derived from the misfortune of others is called Schadenfreude, and there are few examples of this evolving phenomenon better than that of the 1971 film Willy Wonka and the Chocolate Factory (starring Gene Wilder).

Effective Schadenfreude is a way an individual or group can compensate for their status inferiority and establish a self-worth. Schadenfreude can be described as getting pleasure out of another’s misfortune attributed to malicious dislike. When there are two competing individuals or groups, one is generally deemed the superior of the two. This pair of competitors is given the title ‘rivals’. “Schadenfreude toward a legitimately superior rival should be less legitimate” (C.W. Leach et al 2002). The term ‘superior rival,’ is dictated by qualities such as winning a competition or ultimately being more successful in the subject area of competition. Participants show less Schadenfreude when they can admit the other’s superiority.

Often we evaluate ourselves and others based on social comparisons and we envy those that we feel are superior to ourselves based on self-relevant attributes. Stronger Schadenfreude and stronger striatum activation are induced when misfortune befalls people we have reasons to envy. The striatum is the main input station of the brain; therefore some of the emotion envy can be attributed to our neurological composition. Why do we resent those who have
what we want? Why is it that we only want what we don’t have and gain pleasure from when those who have it—lose it? These are the fundamental questions that are answered through the study of Schadenfreude—stemming from envy and resentment. The study of Schadenfreude “bridges two important areas of research, namely, emotional reactions to success and failure and judgments of deservingness that relate to feelings of justice or injustice” (N.T. Feather 2001).

Envy and Resentment are two different but similar emotions. Envy is defined to be a feeling of discontent related to another’s successes or advantages and “creates the conditions under which Schadenfreude should occur—if a misfortune falls upon an envied person” (R.H. Smith et al. 1994). Resentment, the key precursor to Schadenfreude, is a feeling of anger because an unfair act has occurred. Schadenfreude comes from this feeling of resentment because the person enduring the emotion feels the deservingness does not equal the result. This comes from the psychological idea that similar persons ought to have similar fortunes.

Willy Wonka’s chocolate factory had been a mystery for many years until one day it was announced that there would be five golden tickets distributed around the world and the five people who found these tickets would be given a tour of the mysterious factory. Everyone immediately started scrambling to find these Golden Tickets. Schadenfreude originated with the concept of competition. An economic statistical example is: Bob and Mary are both applying for a research position under Schnapple Industries. Schnapple is looking to hire 3 people. If Bob is hired it is still possible for Mary to also be hired. Mary is then informed that Bob has been hired, but she still has not heard back from Schnapple. Mary is then upset because statistically, Bob getting the job decreases her chances of being hired. If it were Mary that were hired the sentiment between the competitors would be reversed. This is the same concept of the children of the world hunting for the golden ticket. Statistically, the more you open the more likely you are to find the ticket. All the children in the world were envious of those who found the golden tickets and few resent them because they feel they deserve it more than those who did find the golden tickets.

Looking at the Wonka example, we see Charlie Bucket. As the main protagonist of the story, Charlie was a dirt poor but good-hearted boy and endearing to all around him. When the news of the Golden Tickets spread, Charlie knew that the odds were against him because of how poor he was, but hoped that he might get one anyway because he deserved it so much. Further perpetuating his hope was his bed-ridden grandpa Joe, who confidently stated, “you’ll get it because you want it more.” Charlie, ever hopeful, opened two chocolate bars, neither of which contained a Golden Ticket. At the same time we see
Varuca Salt, a spoiled child whose father indulged her every whim. Using his army of nut factory workers, Varuca’s father’s workers opened thousands of candy bars to find a Golden Ticket (resulting in a gloating Varuca to exclaim “I found it!”). With her high status and money, Varuca succeeded where Charlie did not. But instead of this logical conclusion, Charlie instead found himself beleaguered by a sense of insignificance, as if he didn’t deserve to win because he wasn’t as rich and important as Varuca—classic Schadenfreude.

Researchers have found, “Schadenfreude has more to do with the inferiority of the self than with the success of others. As well as providing evidence for a specific form of prejudice grounded in group-based emotions” (Leach C.W. et al 2008). What this means is that envy results not because an individual feels that someone is superior to them, but because they feel inferior to the other individual. These two comparisons are not the same. In other words, envy occurs not because one is superior or inferior to another, but because the person enduring the envy feels that they are lacking in comparison. These actions are characterized by a combination of our free will and neurology.

Research has suggested that approach-related positive emotions are associated with greater left frontal brain activity and that withdrawal-related negative emotions are associated with greater right frontal brain activity. “Solely supporting the motivational direction model, recent research has revealed that anger and cognitive dissonance, emotions with negative valence and approach motivational tendencies, are related to relatively greater left frontal activity” (Harmon-Jones E et al.).

Ironically, when looking at the other end of the spectrum, it is common for the winner to gloat. A winner gains more happiness from a competitor’s loss rather than the fact that they won. Violet Beauregarde, one of the finders of the golden ticket was obsessed with chewing gum and beating the world record of chewing the same piece of gum. Every time Violet was given the opportunity to appear on television, she pulled her chewing gum out of her mouth, referred to her friend by the name ‘Darling,’ and broadcasted she was far ahead of her friend in the competition to chew the same piece of gum for the longest amount of time. Violet efficiently demonstrated Schadenfreude because she gained satisfaction from the misfortune of her friend whom was competing to attain the same record.

Willy Wonka was the eccentric owner of the mysterious Chocolate Factory, famous for making the worldwide known chocolate. His plan was to find a child adequate and trustworthy enough to pass on his factory to. When the potential candidates, the golden ticket finders, arrived, Wonka explained that the factory was a place where, “all dreams become reality and reality becomes dreams.” With these dreams came responsibility and if any of Wonka’s said rules were broken, the child who broke the rule would pay the consequence.
Naturally Wonka did not trust each child but they were each given an equal chance to demonstrate their true nature to Wonka, so that he could gauge who would be the best contender to eventually take over the factory. Every child broke a rule, but character evaluation also played a big role in which one Wonka would ultimately choose. This is a similar experiment to how researchers tested and proved that it is resentment and envy that motivates Schadenfreude.

N.T. Feather and Rebecca Sherman (2001) executed this experiment by taking a random sample of 184 university students (47 men, 136 women and 1 who did not specify gender). Each person participating ranked themselves on a scale of 1 to 8 according to how much of an achiever they were and then answered a survey accordingly. The survey was a response to a scenario of another student’s academic success. Each participant ranked how they felt about the student on a 1 to 7 scale in the following areas: envy, happiness, resentment, anger, feeling of injustice, jealousy, pleasure, and a feeling of indignation. Higher resentment occurred when the scenario of little effort and high success was presented. This occurred as a result of the common notion that great effort deserves high success and little effort deserves a lower level of success. Results demonstrated that a setback by a high achiever is often pleasing to competing students rather than the downfall of an average student. It was also shown that pleasure is related to the deservingness of the high achiever and how likable the high achiever is.

Wonka watched the children closely. First went the glutton Augustus Gloop, who was told he could eat anything but the chocolate river. Augustus, refusing to listen, drank from the chocolate river and was sucked in and removed from the contest. Next went Violet Beauregarde, who was so obsessed with gum that when she was told the final product still was not ready and the current gum may have some problems, she chewed it anyway and blew up into a giant blueberry taking her out of the running. Third was Varuca Salt who demanded a chocolate golden egg the second she laid eyes on one. She then sat on a scale that determined whether the egg placed upon it was a good egg or a bad egg. Varuca was ranked a bad egg and went directly into the disposal. Finally, Mike Teavee, a young boy obsessed with television, was fascinated with the shrinking machine that put candy on T.V. His curiosity got out of hand and he transformed himself to be able to appear on T.V., and was lost in the process. This left Charlie as the final candidate. Charlie also broke a rule, drinking soda that made him and Grandpa Joe float, but Wonka deemed the rule he broke as a small humble crime. This process was similar to the experiment run by Feather and Sherman, because like their participants, Wonka ranked the children based on the qualities he was looking for and how they made him feel.
Wonka knew the consequences that the children would endure if they broke his rules. Every time a child broke a rule and had to suffer the consequence, Wonka took pleasure that his plan was working and bad kids were falling out of the contest throughout the tour of the factory. Charlie was the last child standing. He broke a rule, but solved it by reconciling his mistake and witnessing the possible frightening end that was ahead of him. Together using problem solving skills, Grandpa Joe and Charlie figured out that a series of small burps would bring them back to the ground. Charlie, the young, smart, and humble contestant was now the new owner of the world’s favorite candy factory.

Charlie was then faced with the decision of taking this opportunity to become the next creator of the world’s beloved candy or to never work again and still live comfortably. Willy Wonka’s henchman bribed each of the contestants to test their character. They were each offered 10,000 franks to steal Wonka’s new candy, The Everlasting Gobbstopper. Wonka’s henchman described this opportunity to Charlie as, “If you get me one of these, your family will live in comfort for the rest of their lives.” With the group of children being a combination of greedy, gluttonous, and poor, this offer was extremely appealing. Now with only Charlie left, taking on the factory was Charlie’s dream come true, and Wonka knew that Charlie’s qualities made him a perfect fit for the job because he never stole a Gobbstopper to redeem the money offered by the henchman. Competition drove Wonka to test the children’s character because there were people out there who wanted Wonka’s recipes. Schadenfreude is “unlike the more legitimate feelings of pride or gloating in the active defeat of another through direct competition” (Leach and Spears, 2002) and “Schadenfreude should be increased by threats to the in-group’s status” (C.W. Leach et al 2002) which in this case would be Wonka’s competition trying to get hold of the Gobbstopper and other miraculous treats.

Although society dictates that we feel happiness for the success of others and sadness for their faults, Schadenfreude is a private resentment to others’ advantages. It is normal to feel hostile if someone has an undeserved advantage. When a misfortune falls upon a resented person it usually leads to the envious person’s direct gain—hence the misfortune pleases the resentful person. The misfortune then decreases the resentment of the resentful because the resented no longer have as much of a comparative advantage. This is because it now matches what the resentful person believes ought to be. “Socrates in Plato’s Philebus, argued that envy is actually an emotion in which pain and pleasure are mixed with each other—because it is the envious person whom we see ‘rejoicing in the misfortunes of his neighbors’ (p.333)” (R.H. Smith et al 1994).

Willy Wonka and the Chocolate Factory exemplifies all aspects of Schadenfreude.
The children’s story follows the ideas, tests, and demonstrations of the feelings of envy and resentment. Envy and resentment are the foundations of Schadenfreude, which has evolved through human neurological composition and practice. Classic films such as, Willy Wonka and the Chocolate Factory, demonstrate the possible outcomes relating to competition. Schadenfreude helps people cope with the feeling of inferiority and films such as Willy Wonka and the Chocolate Factory continue to stimulate its presence in our culture.

References


Harmon-Jones E. “Contributions from research on anger and cognitive dissonance to understanding the motivational functions of asymmetrical frontal brain activity.” Biological Psychology 67,1-2. October 2004. 51-76.


Jack Bauer: The Guilt Free Bad Ass

Nicholas Mohadjer

In the critically acclaimed television show *24*, special agent Jack Bauer handles national emergencies on a daily basis with what seems to be little regard towards the emotional consequences of his actions. After seven seasons of thwarting terrorist plots, ruthlessly interrogating and torturing suspects in the name of national security, and taking the lives of a few innocent people to save millions, one begins to wonder whether Jack Bauer is possibly human. Although *24* is just a fictitious television show, the idea of a Jack Bauer type individual, someone who can make decisions based solely on rationality rather than emotion, is a scary and yet intellectually intriguing thought. The mind of someone like Jack Bauer is in a continuous cost benefit analysis mode, and therefore the world is viewed in an entirely different way than from the point of view of a rational and emotional centered human. The question then is how and why can someone’s brain think in a hyper rational sense regardless of the severity of the situation? What many researchers believe to be the issue is damage to the prefrontal cortex in the brain, which controls emotional responses in human beings. To better understand how individuals can make purely rational decisions in high conflict situations, one must investigate the effects of damage to the prefrontal cortex and determine what, if any, emotions are drastically altered.

Eslinger et. al (2009) conducted research on children and adolescents between the ages of 10 to 17 who had not experienced trauma to the prefrontal regions of the brain. The researchers gave the participants a cognitive activation task that had them delineate between morally right and wrong situations by pressing one of two buttons. The experiment was divided into three categories including research questions, baseline questions, and rest periods.
Participants were given twenty-seven seconds to determine if three research questions were morally right or wrong. They were then given eighteen seconds to answer two baseline questions that did not have a moral component but were factually true or false. At equal intervals during the experiment, participants were given rest periods, allowing their brain to relax between questions. This experiment was conducted while the participants were having fMRI's of their brain taken to record the cerebral activity that correlated to the questions they were being asked. Before the study was conducted, the participants passed a standardized test to determine intellect, negating the possibility that their responses to questions of morality were determined by their lack of intelligence. What Eslinger and his colleagues concluded was that the prefrontal cortex is crucially involved in the development and maturation of moral judgment (Eslinger et al., 2009). They assert this because the fMRI's showed significant activation of the prefrontal cortex when participants were asked morally charged questions. This study supports the idea that if serious brain damage occurs early on in life, resulting from severe head trauma or brain lesions, it can lead to an underdeveloped or permanently damaged prefrontal cortex, which will impede future moral maturation. Those adults who are able to make hyper-rational decisions, such as Jack Bauer, hold the highest probability of experiencing brain trauma at an early age. If a child or an adolescent experiences massive head trauma it seems probable that as the rest of their brain matures other areas of the cerebrum will take over the decision making function of the mind, most likely leading the individual to be hyper rational. When humans who have not suffered brain damage to the prefrontal cortex are confronted with highly emotional situations, their decisions are usually guided by opposing rationale and emotion. By having these two different functions of the brain giving you information about how to handle a situation, an individual may become conflicted and not be able to make a decision. Individuals who have a damaged prefrontal cortex however, have a much easier time making high conflict decisions because since the emotional part of the brain is damaged, it is not nearly as influential as the fully developed rational part of the brain. To better understand the mind of an individual who has experienced severe head trauma, it is beneficial to look at the trolley car problem: a scientific thought experiment used to determine morality, and compare the results of research subjects who have severe brain trauma and those that do not.

The trolley car problem is a thought experiment that is used to test the morals and ethics of an individual. This problem states that you are standing next to a train track, and at the end of the tracks there are five people tied up with no possible way of escaping. Coming down the tracks is a train that will not be able to stop in time and will kill the five people tied to the tracks. Fortunately there is a lever next to where you are standing, which will divert the train from its current track onto an alternate track saving the five peoples lives. However,
there is one individual who is tied to the other set of tracks, so by pulling the lever that person will die. The central question here is are you willing to pull the lever and only have one person die instead of five? Or do you believe that you should not interfere and therefore let five people die? After research participants make their decision of whether or not to pull the lever, they are given another scenario to consider. The next problem is similar to the first in that there are once again five people tied to the track and a train will strike them if it is not stopped. This time, however, there is no alternate track to send the train on, and the observer is no longer standing next to the tracks, but is above them on a platform with an overweight man standing next to him. The only way to stop the train this time is by throwing the overweight man off the platform and onto the tracks, which will stop the train and save the five people. The central question in this situation deals with an individual’s ability to cope with the idea of pushing a man to his death in order to save five people rather than simply pulling a lever. What many researchers find after they conduct this experiment on individuals with fully functioning brains is that a majority of people would pull the lever, while only a select few would push the overweight man in front of the train.

Fiery Cushman and his colleagues used the trolley car problem in their study regarding reasoning and intuition on moral judgment in individuals who have never experienced brain trauma. They investigated three principles that guide moral judgment: the action, intention, and contact principles. The action principle states that harm caused by action is morally worse than equivalent harm caused by omission. The intention principle asserts that harm intended as the means to a goal is morally worse than equivalent harm foreseen as the side effect of a goal, and the contact principle says that using physical contact to harm someone is worse than causing equivalent harm without physical contact. (Cushman et al., 2006) What the authors were trying to discover was whether people could adequately justify the use of the action, intention, and contact principles showing that they had employed some reasoning at the time of their decision-making or if what they had decided was purely instinctual. What they found was that most people were able to justify the action and contact principles, proving that they did use conscious reasoning to make their decision, while many participants were unable to give a solid explanation for the intention principle, suggesting that it occurred instinctively. This illustrates that people who have not suffered any form of brain trauma are able to think about the action and contact principles, deduce the potential moral ramifications of their actions in relation to the rational solution, and then make a decision. When an individual goes through this internal process of decision-making, especially when faced with a dilemma like the second phase of the trolley car problem, many people will tend to follow their morality because the thought of being personally responsible for someone’s death is unbearable. They are, in essence, making their decision because of an emo-
tional response to the problem. In a paper written by Michael Koenig and his colleagues, an explanation is given on how emotion relates to the brain and contributes to moral judgment, especially in individuals with damage to the ventromedial prefrontal cortex (VMPC). They hypothesized that if emotion is no longer a major factor in individuals who have VMPC damage, they should exhibit an abnormally high number of positive responses towards high conflict situations. In their experiment they asked people with VMPC damage and a control group of non-brain damaged individuals to respond to a series of questions that mimic the trolley car problem. What they found was that there was no variation amongst the VMPC group and the control group in regards to low conflict situations, such as pulling the lever in the first portion of the trolley car problem. The authors consider this to be an "impersonal moral scenario", a situation that induces a marginal emotional reaction and therefore the responses between the VMPC and control group are almost identical. The author’s hypothesis was confirmed when they noticed that the VMPC group had strongly supported high conflict situations, such as throwing the overweight man off the platform in the trolley car problem, as opposed to the control groups negative response towards the same question. The authors realized that in order for the control group to support the proposed action, it requires the subject to overcome an emotional response against directly harming another person (Koenigs et al., 2007). The emotional function of the brain becomes significant here because it prevents individuals from taking action when they feel that they would be directly responsible for the negative outcome. The main emotion that causes many individuals to not throw the overweight man onto the tracks is guilt, an emotion that people with VMPC damage do not have the capacity to feel.

Ian Krajbich and his colleagues discuss how guilt is greatly diminished in individuals with VMPC damage by having research subjects participate in economic games and recording their behaviors. The authors recognize that there are three possible roles VMPC damage can play in regards to social behavior. The first is that it will diminish or abolish all emotion. This is too extreme a hypothesis though and the authors dismiss this idea. The second possibility is that VMPC damage will impair complex theory-of-mind abilities but not emotions. However, Krajbich and his colleagues are confident that certain emotions are hindered by damage to the VMPC, and therefore they hypothesize that only a few emotions are effected when such brain trauma occurs (Krajbich et al., 2009). After much experimentation the authors conclude that their findings are consistent with their hypothesis. Their main result was that VMPC damaged individuals show an incredibly high insensitivity towards guilt, yet retain the capacity to use the theory-of-mind, which is the ability to think about other people and how they will respond to a situation. The economic games played in this experiment included the dictator game, where the participant is given 50 points and allocates a certain amount of points to an-
other research participant. The participants also played the ultimatum game, where 50 points are given to them and then the participant must allocate some points to the other participant who can either except or reject their offer. The dictator game is meant to measure an individual’s level of guilt by seeing how many of their points they are willing to give up without receiving anything in return. What the results showed was that on average VMPC patients only allocated 4.7 points, as opposed to the control group allocating 12 to 18 points. This shows a significant decrease in the level of guilt felt by VMPC patients and demonstrates that their brains do not perceive guilt in as strong a fashion as individuals with fully functional brains. Daniel Fessler says that the primary function of guilt is “to identify and reverse the damage done to a cooperative relationship” (Fessler et al.), meaning that guilt helps restore and maintain equilibrium. However, in the ultimatum game the researchers also noticed that VMPC patients would offer far less money than they would demand, showing that they do not feel guilty for demanding more than they are willing to give themselves. This suggests that individuals with VMPC damage have an affinity for greed because they do not feel the need to reciprocate good deeds. Jade Price examines the societal functions of guilt and how it motivates individuals to treat people in relationships (Price et al., 2005). She shows how economic games, like the ones played by the VMPC patients, hinge on guilt because if someone feels guilty after they defect they are much more likely to cooperate the next time. In the dictator game, researchers measure guilt by how much someone is willing to offer to their partner. Price claims that guilt is the emotion that causes someone to be generous because it is one of the prime emotions that keep individuals from violating the moral values of society (Price et al., 2005). Although allocating points to your partner is generous, it is not the logical choice because keeping everything for yourself maximizes your personal profit. Since individuals with VMPC damage tend to think in a hyper logical sense, it is clear why they completely lack guilt; it is not a rational emotion since it just reduces an individual’s ability to accrue more personal benefits. With their lack of guilt, they do not see the need to apologize for any of their actions that they were able to rationalize in their own mind, especially those that are considered high conflict situations. Doing what seems rational in all situations though may be a major violation of morals and the law, but because guilt was not present to make an individual dismiss their radical thought they will do what they think is right. To prevent such situations from occurring individuals rely on societal influence and personal knowledge to keep people from making decisions that guilt would have helped prevent.

Furthermore, individuals with VMPC damage lack guilt, but they still have the capacity to attain general intelligence, logical reasoning, and declarative knowledge of social and moral norms (Koenigs et al., 2007). This means that individuals who experience this type of brain damage still are able to function
at an extremely high level, and their brain damage would be almost unrecognizable aside from the occasional inconsiderate or surprisingly cold remark. This shows that it is possible for an individual to live a seemingly normal life with this type of brain condition. However, one cannot forget that if they were confronted with a high conflict situation it is possible they would do highly abnormal things in relation to what society and other normative individuals would do. All that can be hoped for is that individuals who do have VMPC damage do not live in high stress environments, unlike Jack Bauer who lives in a never-ending cycle of high conflict situations. One could argue that the world needs a Jack Bauer type figure that may not always do what is right, but will do what is necessary in high-pressure situations, but that debate can be saved for a paper regarding societies need for a vigilante.

The fact that Jack Bauer does not possess the emotion of guilt makes the character and the show 24 much more compelling because what Americans like to see in a crisis is decisiveness and the ability to make difficult decisions. What makes the show hugely popular is that Jack Bauer will use whatever means necessary to get his job done, and people like to see someone who is willing to put emotions to the side and stop at nothing to get his answers. It is not that Jack Bauer is out looking for someone to torture all the time, but when he is given his own version of the trolley problem he will not hesitate to sacrifice one life, if it means saving the lives of millions more. Jack Bauer is willing to do things that the average person cannot and would not do because of his brain’s inability to recognize guilt and because he is quite possibly the most hard-core fictitious terror fighter to ever walk the face of the Earth.

Nicholas Mohadjer is a 1st year student at UCLA. He is currently studying communications and hopes to someday be a lead anchor on Sports-Center. There are three things that he loves in the world: his family, the Lakers, and Jack Bauer. He just feels honored to have been able to write his paper on the most significant of the three. Just kidding mom.
References


The Evolution of the Pursuit of Happiness

MATTHEW ISBELL

“Consciously or not, directly or indirectly, in the short term or in the long term, whatever we do, whatever we hope, whatever we dream, somehow is related to a deep profound desire for wellbeing or happiness.”
— Mathieu Ricard

Humans are peculiar beings no matter what way you look at it. We love the most bizarre things (sprinklers, left-green turn arrows, rhythmically spaced sounds, water-skiing, shiny objects) and often behave in ways that any alien would instantly term strange (anyone care to run around in the cold wearing only underwear after slightly poisoning our bodies?). When closely analyzed, many human activities seem illogical, but from afar they are easily explained; they make us happy. We run around in sprinklers and water-ski because it is fun. We listen to music because it is often a joyful experience (assuming the musician is skilled and not particularly obsessed with the kazoo). Most common people explain our strange behaviors by pointing out that these things make us happy, and those same people are obsessed with pursuing and finding activities that bring about this emotion. But why? Why are we so utterly obsessed with pursuing happiness? Everyone wants it. As Mathieu Ricard so insightfully pointed out, “No one wakes up in the morning thinking ‘may I suffer the whole day’” (Ricard Video). In the evolutionary trend, therefore, the question is presented: what evolutionary advantage did our ancestors have by being predisposed to search out activities and paths that they thought would bring them happiness? Why, in short, do we pursue happiness? It turns out that there are very logical evolutionary explanations for these questions, but
before directly presenting those, we should explore the concept of happiness and some of the strange statistics surrounding it.

Happiness is a feeling. Everyone knows how it feels to be happy. However, as anthropologist Gordon Mathews has stated, happiness can refer to tasty good, a good friend, a nice house, a healthy marriage, or even a relationship with the divine (Matthews 2). Ultimately, most scientists agree that happiness is subjective; no one except the individual can say whether he or she is happy (Mathews 2). From an anthropologist’s perspective, it should be noted that the notion of happiness shows up in every culture. Most cultures differentiate, however, between something very immediate like pleasure or joy and more long-lasting experiences such as satisfaction and commitment (Nettle 16). Though there does seem to be a tangible distinction between these two types of happiness, the details and discussion are beyond the scope of the beginning of this essay and therefore we will start by dealing with happiness as a single concept. Happiness, for our uses here, will most simply be defined as what Daniel Gilbert refers to as the “you-know-what-I-mean feeling” (Gilbert 35). It is a positive emotion that is subjective, yet very tangible to the individual experiencing it.

A good place to start understanding happiness is to look at what makes people happy. There was a study performed at Princeton where a group of people was notified randomly throughout the day by a cell phone to stop what they were doing and complete an online survey. This survey was full of questions specific to how the person was feeling about the activity that they had been performing immediately before the cell phone interruption. The top things that people liked and that brought them happiness were sex, having a drink with friends, and work itself (Schoch 2). Another study pin-pointed the main sources of happiness as food, drink, sex, interactions with friends, the experience of success in some domain, discovering, learning and physical activity (Nettle 33; Etcoff Video). It is also very well documented that married people are much happier than those who are not. (Nettle 78). None of these findings are exciting or strange. Anyone who has experienced any of these things naturally associates them with good feelings or positive emotions. The nature of these particular likes, however, is very interesting evolutionarily, which will be discussed at a later point. Although these answers of what makes people happy are unsurprising, there are some very surprising statistics on the nature of happiness.

The first interesting fact about happiness is that it is incredibly relative. Many studies show that a large extent of a person’s happiness is due to how that person believes he or she matches up to those surrounding him or her. In one study participants were asked questions regarding income. It turns out that a vast majority of the participants showed a much greater preference to earning
$50,000 in a world where people earn $25,000 as opposed to earning $100,000 in a world where people earned $250,000 (Nettle 38). In a related study, a person’s idea of what the bare minimum amount they could live on changes relative to wage increase rather than price increase. In other words, people’s idea of how much money they could survive on did not depend on how much things cost, but how much others in society were making. Aside from money, satisfaction is relative regarding other subjects as well. It turns out that people are significantly less satisfied with their partners after being shown pictures of models. People who had not been shown the photos reported a much higher level of satisfaction with their spouses than those who had seen the photos (Nettle 38). Happiness is also relative when people relate their present situation to what could have been. Bronze medal winners are happier than Silver medalists. The only way this makes sense is because the bronze medalists are relating their present experience with almost not getting a medal (so they are relatively better off) while silver medalists are relating their present experience with almost getting the gold medal (so relatively they are worse off) (Nettle 38). Happiness we can conclude, therefore, is in a very important way related to the behavior and success of the people that surround us.

Another interesting thing about happiness is that people greatly overestimate how happy certain things will make them as well as how unhappy other things will make them. Daniel Gilbert, a Harvard psychologist, while on stage at a TED convention, asked the audience what they would rather have happen to them: win the lottery or become a paraplegic? To both the audience and every human on the planet, this seems like a no-brainer; we would much rather win the lottery. Our brain automatically imagines each situation briefly and concludes that winning the lottery would bring us a great deal of happiness while becoming a paraplegic would certainly be one of the most horrific things we could imagine. Interestingly enough though, after a year’s time both groups are equally happy. It seems that our initial reaction greatly overestimated both sides of the issue, how much happiness the money would bring and how unhappy we would be in a wheelchair (Gilbert Video). This phenomenon occurs in study after study, however. It seems that no matter how much our circumstances improve, we adapt to them and are no happier than before. It is also incredible, however, how well humans adapt to horrific events and circumstances and are able to find happiness in almost any situation. When thinking of both types of experiences, humans tend to overestimate the effect that a single event will have on their happiness.

The fact that humans overestimate how much the manifestation of a certain event will improve their happiness has been studied extensively. For example, it has been shown that the happiness attained by a pay raise only lasts a few months before the recipient’s happiness levels lower back to what they were
before the income increase. As the happiness levels lower again, the person is just working towards something else that he or she is convinced will bring more happiness. Psychologists refer to this as the hedonic treadmill (Buss 19). First, all someone needs to be happy is a stable job. Then all they need is an attractive spouse. Then all they need to be happy is a home that they own. The next thing is a pay raise followed by a second vacation home in the mountains. Nettle showed that at all times there was a gap between what people had and what they thought would make them happy if they had it.

One study showed this gap when they interviewed a group of people asking them what would make them happy. For the purpose of explanation, let us assume the one participant answered a pay raise and a nice car. Years later, the same people were interviewed. The study asked the same question as well as checked up on the person’s status regarding their previous answers. The results showed that most people had attained the items they had answered the first time, but now had a new set of items that they needed in order to be completely happy. To continue the example, our participant had the pay raise and car (along with a slew of other things), but now answered that to be completely happy, a house in the suburbs and a promotion were necessary. There was always a gap between what the person had and what they thought they needed to have to be happy (Nettle 58). In this way, it appears that our choices in life (what we do, where we work, etc.) do not come from our actual experiences of happiness, but from what Nettle calls our “implicit theory of happiness” (Nettle 90). Everyone has an idea of what will make them happy and their actions are motivated thus.

With all these facts and studies discussed, the question to be answered is why did we evolve such behavior as this? Randolph Nesse said, “Natural selection doesn’t give a fig for our happiness. It just wants us alive and making babies, miserably if need be” (Nettle 149). Natural selection oriented us to care about this elusive idea of happiness, however, and there are some very good reasons why. Before we go on, let us recapitulate the strange discoveries about happiness we have discovered. First, the things that bring the people the most happiness are sex, socializing, food, discovering, learning, enjoying success in some activity and focusing on a loved one. Second, happiness is very relative, mostly to how we measure up to those around us. Third, people tend to greatly overestimate how happy they will be if something happens as well as greatly how a tragic event will affect their happiness. Finally, there always is a gap between what people have and what they think they need to have to be happy.

Scientists have documented very well that the current mechanisms of the mind are the final products of natural selection, a process in which different features were passed on from one generation to the next because they contributed ei-
Behavior that is inspired by emotional systems is not shaped directly by natural selection, but the parts of the brain that activate them are directly selected for (Nesse 1336). It is fairly well known that every human being (as well as every vertebrate) has been equipped by natural selection with systems that allow them to detect negative events in their environment (negative here being used to mean something that has a potential impact on the individual’s biological fitness). This system is designed to keep us away from these potential dangers to our fitness (Nettle 38). Our present day fears are great examples of evolution’s effect on our present behavior. For example, cars kill more people than spiders every year, but people are much more afraid of spiders than cars, simply because spiders were a threat to our ancestors and cars were not (Nettle **). We have many negative systems like this such as disgust, anger, and sadness (Nettle 32). All of these systems helped our ancestors in the past relative to others in their group and therefore have been passed down all the way until us. None of these systems are perfect nor do they provide the optimal action in every circumstance but, for the most part, at least in the past, these systems seemed to inspire action that had a tendency to maximize reproductive success (Nesse 1337).

These systems are designed to keep us away from things that hurt us, but what about a system that draws us towards things that help us? Is there a system that responds to good things in our environment or opportunities that could be helpful to us? The answer is a resounding yes; it is the happiness system. Negative emotions are very helpful in situations that pose threats, but positive emotions are advantageous in situations that offer opportunities (Nesse 1338). This happiness system that evolution has supplied us with is designed to help us notice what is good for our biological fitness and move us away from things that are bad for us (Nettle 38). Darwin stated “that natural selection produced pleasure only if that pleasurable state induced beneficial actions” (McMahon 416). Beneficial actions in this scenario are things that are beneficial either to sexual fitness or to physical fitness. Darwin, as always, seemed completely correct in his statement. This is exactly what the happiness system does. It rewards us for attaining things that are beneficial to our fitness as well as motivates action towards a goal that will be beneficial as well. Now let us explore how this affects our actions today and explains the strange nature of happiness as outlined above.

The first thing that the happiness system does is reward us for attaining things that are beneficial to our overall fitness. If we break down the entire system of happiness, we can call this the pleasure system, a system that lies within the happiness system as a whole (Nettle 167). If we point back at the things that people said make them happy, this point is easily seen. People like to eat food. That definitely is a good thing to be rewarded for. Ingestion of any tasty
good or any food at all after a period of not having food leads to intense pleasure (Chemali 496). People also enjoy social situations. Humans have always been very social animals and we do not survive very well alone. Therefore it would have been incredibly beneficial for a human to be rewarded for socializing and making friends with whom he or she could live with in a group (and perhaps share the work of surviving). It was also noted that people like discovering and learning. Knowledge about the environment would also have been a wonderful advantage to have in order to gain success within the group. Success in some activity is an obvious benefit, and naturally evolution would have rewarded us for such behavior. Finally, focusing on a loved one (such as a child or a spouse) would have been helpful in creating bonds that would ensure the safety and success of shared genes, what natural selection seems to really care about. All of these likes are biologically advantageous to have and in face would help in maximizing reproduction, what all of us are really designed for (Nesse 1337).

Understanding that we are rewarded with happy feelings by attaining things that have a positive effect on our biological fitness, why is happiness so relative? The study showing that people increase the minimum amount they think they need to survive as wages increase rather than cost increases states that happiness is more complicated than a rewards system. If it were so simple, we would only care about attaining the items necessary for survival and cost would be the most important aspect. This is not true however. Why does it matter how successful others are attaining similar items? Why do people take pleasure in the downfall of others (Buss 18)? The answer lies in the sexual attraction of wealth and success. A female, when choosing a mate, is more likely to choose a male with more wealth (used in this sense to mean anything from food to status goods) that a less wealthy male simply because her offspring will have a greater success surviving in an abundant environment. Thus, by having more wealth than his neighbor, the male becomes more sexually fit than his neighbor. Since natural selection cares about maximizing reproduction, this slight advantage is very valuable. Because of this, we have evolved in a way that absolute health is not the only element that ensures reproductive success; relative status has become very important as well. This relativity made it very difficult for us to inherently know what would be the optimal behavior as conditions and environments changed, so instead we have evolved a psychology that looks at who is the most successful in our surroundings and attempts to be even more successful than those individuals (Nettle 86).

This explanation does very well to account for real life human activity. According to this view, the happiness system would naturally make us unhappy to see others enjoying more success than we ourselves are enjoying. In this way, we are motivated to work harder in order to be more successful ourselves. Evolution has selected for those individuals that had this motivation
in the past because they were more fit reproductively (more attractive) and therefore this type of behavior was rewarded. Unhappiness due to the recognition of another having more success than you is simply an evolutionary sign telling you to work harder and attain more.

So far we have unraveled some of the mysteries of happiness (why we like what we like and why happiness is so relative), but how can we explain why we overestimate how different experiences affect our lives? Shouldn’t we be able to accumulate all of our past experiences and make a fairly accurate approximation of how much we will enjoy similar situations? Let us remember the example when Dan Gilbert asked the audience what they would rather have happen to them, win the lottery or become a paraplegic. When imagining both scenarios we wildly overestimate how they will affect us in the long-term. Lottery? Why that would solve everything! Losing use of my legs? I would never be as happy as I am now again. Gilbert proved that neither of these imagined scenarios were true at all. Both groups returned to normal levels of happiness within a year (Gilbert Video).

Evolutionarily, the reason we overestimate how negative things will affect us is very simple. Something like paraplegia would have severely inhibited both physical and sexual fitness. It makes sense why evolution would have selected for individuals who would do all they could to avoid outcomes like this one. Other scenarios such as losing a close friend, losing a mate, or becoming impoverished all play on the same system. Imagining any of these scenarios forces us to conclude that that would be the end of life as we know it. This simply is not true, however. Although losing a mate would be devastating at first to say the survival of your children, it is not the end of your world. However, by convincing us that it would be the end of the world, natural selection has embedded in our brains a system that ensures that we stay away from activities that could result badly for our overall fitness.

This same logic can be used to explain why we overestimate how positive events will affect our lives. Natural selection has us convinced that any scenario that improves our overall fitness is a really, really good thing to pursue. Convinced of this point, we are motivated to work hard and give long hours that are not particularly pleasurable because we think that the payoff will be great. Once we achieve our goal, it is not particularly important that we are not incredibly satisfied with it (or at least not for a long period of time) because it is not the happiness that is advantageous to our fitness, but the actual goal. By having a system that convinces us that we will be highly rewarded with positive emotions once we attain the goal, we seek to attain it. Any previous humans who thought that the goal was not very important or did not have a system that convinced them of its necessity would not have worked for it and in turn would not have received the relative advantage that having
it provided. Selection would have been for the individual with the more convincing system since it would have the long-term advantage. To overestimate was actually very beneficial for overall fitness in the long run.

This overestimating leads into the final element of happiness requiring explanation. This element is the gap that lies between what people have (status included along with material wealth) and what they think they need to be wholly happy. People are never entirely satisfied with their position in the world and can always think of a few things that, if they had them, would make them much happier. This was seen in the study that asked people what they thought would make them happy at two different occasions, years apart from each other. Although on the second occasion participants had acquired many of the things that they had answered the first time, they all had a slew of new items that would now bring them happiness (Nettle 58). Thus we conclude that there is almost always a gap between what people have, no matter what it is or how much they have, and what they think they need to be fully happy. Natural selection has conditioned us to experience short amounts of pleasure in the attainment of goals that contribute to our survival, but it has also conditioned us to adapt very quickly to what we have achieved and then to always strive for a little more (McMahon 422). The general conclusion for this is that it is never evolutionarily advantageous to be completely content. In theory, there might always be something better just around the corner. Therefore it would have been more helpful to have an insatiable appetite for more, given that every once in a while you were bound to find it (Nettle 98). Nettle explains that an individual that is too content sitting in the berry patch that she has found might be disadvantaged relative to someone who is quickly bored because her competitor will be the first to the salmon run and she the last (Nettle 165). A state of enduring satisfaction or long-term contentment does not appear to be very conducive to survival (McMahon 422). Consequently evolution should equip us to behave in two ways: first we should never be entirely satisfied with what we have, or at least not for too long; and second we are constantly creating a new baseline of the best thing that we have at that moment so that we strive to look for something better in the future, regardless of if that better thing is already clear to us or not (Nettle 165).

Earlier we broke down the happiness system as a whole to include the pleasure system. This was a sort of rewards system that gave us pleasure out of such things as sex, food and friends. Now we can also include the desire system in the breakdown. This system does not work in the short term like the pleasure system does, but over long periods of time. The things that we like that invoke the pleasure system are very basic survival necessities. The desire system is much more complex and always subjective according to what an individual has at that moment and what those around him or her have. It motivates us to work hard in the short term and give up things that would oth-
erwise give us pleasure with the idea that there will be a large pay-off in the end. Even when this pay-off is not as long lasting or as large as we imagined, however, we no longer care due to the fact that we already have something else in our mind to work towards. Therefore people’s behavior and action is motivated by this desire system that has an implicit theory about what will make them happy, even though this is not always the case (Nettle 153). This phenomena is the hedonic treadmill mentioned earlier that always keeps us running towards something else, and seems to be a sort of cruel trick natural selection has selected for that keeps us competing and ever-striving for more (Nettle 152).

Through all of these explanations it seems we have a fairly good understanding of why people pursue happiness, even if we arrived in a sort of round-about way. First, we learned that in the short term we seek things that make us happy because they are immediately beneficial to our fitness. These are things such as food, friends, mates and sex. Second, we were able to conclude that happiness is very relative to what others around us have. Therefore we pursue behavior that will with luck make us more successful than they are and therefore have a reproductive advantage. Next, considering the fact that we overestimate how happy certain things will make us (or how unhappy they will make us) we solved the riddle of why we pursue these things anyway. The answer was simply that to be convinced (even if wrongly so) that something would make you happy, convinced enough to work for it, would give a long-term advantage once the object or goal was obtained. Finally, we made sense of why we continually have a shifting-baseline of what makes us happy and why things we want can only satisfy us for a short amount of time. Evolutionarily, to be continually insatiable would have inspired an individual to continually search for something better, for something that would give an even greater advantage to that individual.

With all of this said, it seems that the pursuit of happiness is the most important part of the equation. The moments of actual pleasure are simply rewards for our good behavior. By pursuing happiness we are always moving in the direction of things that are advantageous to our fitness. Our ancestors who pursued happiness were rewarded with increased fitness and reproductive success; therefore we have inherited the brain mechanisms that inspired such behavior. They pursued happiness and were better off for having done so. Perhaps as we pursue it we will begin to understand that we are designed for the chase. From this understanding, it might be possible to slowly begin to override the desire system and its knack for convincing us of large amounts of happiness at the end of tiresome journeys. Instead we might begin to opt for more pleasurable journeys. After all, we were never meant to enjoy the destination in the first place: simply arrive as fast as we can before promptly running off toward the next stop we see. If happiness is really what we want,
then all we have to do is make the journey as pleasurable as we can, taking refuge in the knowledge that the destination is not all that our brains make it out to be.

References


