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Something Larger: An Evolutionary Account of the Meaningfulness of Life

Abstract

This paper explores the origins of a subjective sense of meaning in life from the perspective of cultural group selection within evolutionary theory. Philosophical underpinnings are discussed, as are the origins of morality and social groups. It is argued that a subjective meaning acts as a motivator of cultural transactions which allowed pre-human groups possessing meaning to survive over groups of individuals lacking meaning.

Keywords

Positive Psychology, Meaning, Evolution, Group Selection, Morality, Social Groups, Altruism, Hive Emotion, Culture

Running Head: SOMETHING LARGER: THE ORIGINS OF MEANING

Something Larger:

An Evolutionary Account of the Meaningfulness of Life

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The Concept of Meaning

One can assume with modest trepidation that as long as human beings have utilized language and possessed the ability to know themselves consciously—and therefore have had an ability to inquire about the world around them—they have posed questions about the meaning of their lives. These questions stem, it would seem, from an intrinsically human desire to comprehend the workings of the world and to understand one's own purpose within it. As scientific research begins to emphasize the importance of meaning for psychological well-being, an investigation into its origins ought to shed light on what constitutes meaning by demonstrating why and how we were designed to feel a sense of purpose in our lives.

One framework that allows an understanding of the origins of meaning is Darwin's theory of descent with modification, more popularly known as evolution. This theory aims to describe the origins of species and the processes by which one species may give rise to another. While taking a naturalistic view of meaning is merely one perspective among many others (i.e., religious or philosophical views, for example), exploring the evolution of meaning provides powerful answers as to why meaning exists. A complete theory of meaning must undoubtedly incorporate non-naturalistic perspectives, but evolution yields the most convincing arguments in the investigation of origins.

Increased knowledge of meaning's origins has numerous implications. Evolutionary psychology as a whole persists by providing insight into current psychological constructs via theories of origination. Understanding the rich and complex evolutionary nature of a construct such as meaning should allow psychologists to design a stronger model of what meaning is, its effect on individuals and groups of individuals, the manifestations it can take, the degree to

which it can change, and both how and why it may affect other constructs of interest such as emotional well-being, physical health, positive social relations, and spirituality.

Meaning, as defined by positive psychology, is the subjective sense of a connection to something larger than oneself. Through an exploration of evolutionary origins, this paper will argue the following points about meaning: (1) The meaningfulness of human life can be reduced to subjective meaning. (2) Connection to a larger social group was adaptive to the survival of (or naturally selected for in) pre-human organisms including single-cell organisms. (3) Social group connections are modulated by morality which was also shaped by natural selection and evolved alongside the origination of social groups. (4) Along with these adaptations, humans evolved via culture allowing metaphysical concepts of meaning, such as religion, that survived as a result of their benefits for group survival. (5) The subjective feeling of meaning and purpose associated with this connection was an adaptive result of cultural group selection in human groups that motivated individuals to seek out and share cultural knowledge. (6) Meaning, therefore, evolved to encourage an enhanced and deeper pursuit of social connection.

Objective Versus Subjective Meaning

Meaning can manifest itself in two major ways: ultimate, objective meaning and relative, subjective meaning. The former represents a class of meaning that is universal, designed by some entity external to the human experience, and would equally define meaningfulness for another breed of life on a different planet. The latter represents types of meaning that are inherently tied to what it means to be human and do not necessarily define meaningfulness outside the realm of human life. We often find comfort in the idea that our lives are serving some great and ultimate purpose beyond the human realm.

But what if they are not? What if there is no ultimate meaning to our lives? A classic argument states that on a cosmic scale, humans are insignificant specks that survive for a mere blip of celestial history (as if to say that simply being larger or living longer would make our lives more meaningful in some way). Let us run, for a moment, with the hypothesis that all human life—and therefore our own life as well—is absurd. Nagel (1971) defines a situation as absurd when an evident discrepancy exists between the situation's pretension or aspiration and its reality. For example, as a president is inaugurated into office with regal pageantry, his pants fall down exposing heart-printed boxers. In considering the meaning of life, Nagel argues that we can find such an absurdity in the discrepancy between the seriousness with which we pursue our lives and the possibility that everything we are so serious about is arbitrary in the sense of an ultimate and objective meaning. As interpreted by Murphy (1982), the things we value most in life are the very things we have difficulty justifying. Any line of "Why?" questioning eventually leads to an end, such as happiness or Aristotle's eudaimonia, which is an accepted value. These ultimate values that drive our behaviors and determine our character in the direction of right and wrong (or goodness and evil) are the basis of morality. If these values are the foundation of all that we do and they truly are arbitrary, then everything we do is arbitrary and human life can, in fact, be considered absurd. There exists a major misalignment between the vigor with which we pursue purposefulness and the lack of any external purposefulness in why these ultimate values should be considered meaningful.

As a means to managing this dilemma of ultimate meaning, human cultures have devised religions and a conception of God that provide a sense of psychological comfort, but Murphy (1982) argues that a belief in God does not ultimately guarantee the ultimate meaningfulness of life in a philosophical sense. (A belief in God, of course, may very well provide a strong sense of

subjective meaning.) A traditional religious claim is the belief that God is the author of morality, and thus that which we value in the ultimate sense has value because of God's will. In Christianity, for instance, mankind was created out of God's image, and since God is infinitely good, humans must be good also (Quinn, 2000). There exists no logical evidence, however, that God can determine an objective goodness. In any way that God creates goodness, there must be some external standard by which we evaluate him as good. The questions we pose about the goodness and origin of humans must likewise be asked about the goodness and origin of God; to say that God has always existed and has always been good is no better an explanation than claiming the same properties of humans. Calling to God as a source of the ultimate meaning of life leads to a recursive chain of questioning. We must, therefore, seek other pathways to investigate the source of our morality to determine the validity of that which we deem ultimately meaningful.

If, however, according to Murphy (1982), a religious basis for ethics does not hold up, then neither will any secular alternative such as any explanation based in moral philosophy or scientific reasoning. If God's will does not survive logical explanation as the source of ultimate meaning, then it is difficult to see how serving the state or promoting oneself or mankind will vie any more successfully. Murphy concludes that there is no rationally-based proof supporting that what matters to us most has objective value and that, from the perspective of rationality, human life is absurd. There may be no ultimate meaning to human life. He adds, however, that our lives are absurd only because we live so seriously in the expectation of fulfilling an ultimate meaning. Both religious and nonreligious attempts to justify the worth of our morality fail in that they rely on intellectualism.

The method of intellectualizing morality and seeking an ultimate meaning aims to separate our aspects that are uniquely human from those that are animalistic. This objective can be found, among others, in Descartes' dualism and Kant's moral philosophy as well as in numerous religious creeds. If one adopts a theory that grounds one's ultimate morality in reasoning and one faces evidence that the theory is intellectually bankrupt, one might predict a loss of meaning (Murphy, 1982). One will find, however, that life goes on much as before and that subjective forms of meaning fulfill all of our human needs for purpose. Murphy's answer to this result is that morality has never required intellectualization and is ultimately driven by our animalistic natures that many who have attempted moral theories have worked hard to deny (perhaps as motivated by the ethic of divinity (see Haidt, 2006)). Hume (1739) concurs:

Most fortunately it happens, that since reason is incapable of dispelling these clouds, nature herself suffices to that purpose, and cures me of this philosophical melancholy and delirium, either by relaxing this bent of mind, or by some avocation, and lively impression of my senses, which obliterate all these chimeras. I dine, I play a game of backgammon, I converse, and am merry with my friends; and when after three or four hours' amusement, I wou'd return to these speculations, they appear so cold, and strain'd, and ridiculous, that I cannot find in my heart to enter into them any farther. Here then I find myself absolutely and necessarily determin'd to live, and talk, and act like other people in the common affairs of life (Book I, Part IV, Sec. VII).

Hume presents a case for uncovering the true origins of morality and our subjective meaning as a means to justify the meaningfulness of our lives. Hume, as evidenced in *Dialogues Concerning Natural Religion* (1779/1948), even suggests a process similar to natural selection as a potential

explanatory mechanism for the issues at hand. It is to the theory of natural selection to which we shall soon turn our attention.

Accepting the above arguments, the meaningfulness of human life can be reduced to subjective meaning. In order to understand why we feel subjective meaning, we must appreciate its origins. Morality, as discussed thus far, lays the foundation for the subjective meaningfulness of our lives according to philosophers. From a psychological and sociological perspective, morality serves as a foundation for how humans interact with one another in group settings. Evolutionary biology has, in recent years, begun to make claims regarding both the formation of social groups and the origins of morality. Bridging these three ideas is the primary objective of this paper.

Meaning and Positive Psychology

Positive psychology, in its attempt to guide the scientific investigation of human flourishing, has developed a tripartite theory of well-being (Seligman, 2002). Human happiness, as the theory goes, consists of a combination of positive emotions, engagement in the form of flow, and meaning. Meaning is defined as a connection to something larger than the self, and I believe, to the extent that meaning is the least understood and developed piece of the theory, this definition is purposefully ambiguous. Meaning, as follows from the philosophical discussion above, can be a hard concept to grasp. The areas of positive emotion and engagement have been deeply investigated (Csikszentmihalyi, 1990; Peterson, 2006; Seligman, 1990; Seligman, 2002). Positive psychology has also, however unaware, been building a case for the existence and importance of meaning as dependent on social connection.

In a study seeking to discriminate the characteristics of very happy people (Diener & Seligman, 2002), results overwhelmingly showed that the happiest individuals in the study were

those with rich and meaningful social relationships. The happiest participants scored highest on self-ratings of close friends, strong family relationships, romantic relationships, and average time spent with friends, family and romantic partner; scored lowest on time spent alone; and were rated highest by their peers on the quality of their relationships. While measures focused primarily on emotional assessment, there is no reason to believe that a sense of meaning should not affect emotional well-being. King, Hicks, Krull, and Del Gaiso (2006) describe a series of studies linking positive affect to the experience of meaning. Positive psychology would benefit from further research investigating the relationship between individuals' social relationships and measures of subjective meaning.

Realizing that the traditional taxonomy of emotions was largely and perhaps inappropriately skewed towards the inclusion of negative emotions, Fredrickson (1998) developed a broaden-and-build theory of positive emotions. She claims that positive emotions broaden an individual's thought-action repertoire and build resources. These resources include, in addition to physical, cognitive, and intellectual resources, social relation-building that leads to altruism and cooperation. Fredrickson modestly states that positive emotions may therefore have been shaped by natural selection. It is clear, however, that her theory supports a notion of positive emotions in the service of social group success.

One of the largest contributions of positive psychology thus far has been the taxonomy of character strengths and virtues compiled by Peterson and Seligman (2004). This classification describes and organizes twenty-four human virtues found to be reasonably consistent across time and cultures. These virtues may serve as psychology's contribution to the ultimate values dilemma (i.e., that the things which matter to us most and motivate our behavior are logically indefensible). While they provide no proof of ultimate goodness—as we have shown may be

impossible—they do elucidate the scope of such virtues. The character strengths fall under six overarching categories that include wisdom and knowledge, courage, humanity, justice, temperance, and transcendence. Many of these strengths—no less than half it would seem—have obvious intrinsic social value such as love, citizenship, forgiveness, and gratitude. They help us to regulate and maintain important relationships. Most, if not all, of the others including spirituality, creativity, and curiosity may have less obvious but equally compelling social foundations.

Moral psychologist Jonathan Haidt brings much to the table of positive psychology in terms of morality, social groups, and meaning. Haidt and Graham (in press) defend a five foundations theory of intuitive ethics claiming that “natural selection prepared the human mind to easily learn to detect and respond to (at least) five sets of patterns in the social world.” These five foundations are harm/care, fairness/reciprocity, ingroup/loyalty, authority/respect, and purity/sanctity, all of which support the notion that morality modulates a connection to one’s social group. It is with this base from positive psychology that we shall now turn our attention to origins of morality, social groups, and subjective meaning via Darwin’s theory of natural selection.

The Evolution of Morality, Groups, and Meaning

Natural Selection and the Origins of Humankind

An understanding of the evolution of meaning requires a basic knowledge of evolution itself. In the face of a long and passionately-defended history of teleological arguments for the creation of humankind (i.e., those that depend upon the purposeful design of a supernatural being), Darwin proposed a revolutionary theory of natural selection. Prior to his momentous work, religious concepts of creationism were the only seriously considered accounts of the origins of

humankind. These theories assumed that, due to the immense complexities of the universe and human beings—particularly those aspects which appear so perfectly suited for the purposes they serve—the world and humankind must have been designed by some intelligent creator. One of the most compelling arguments of this kind was put forth by eighteenth-century theologian William Paley. He writes the following:

In crossing a heath, suppose I pitched my foot against a stone, and were asked how the stone came to be there; I might answer, that, for anything I knew to the contrary, it had lain there for ever: nor would it perhaps be very easy to show the absurdity of this answer. But suppose I had found a watch upon the ground, and it should be inquired how the watch happened to be in that place; I should hardly think of the answer which I had before given, that for anything I knew, the watch might have always been there...[I would conclude] that the watch must have had a maker: that there must have existed, at some time, and at some place or other, an artificer or artificers, who formed it for the purpose which we find it actually to answer; who comprehended its construction, and designed its use. (As cited in Dawkins, 1986, p. 4)

Paley's sentiments are such that while he can conceive of the natural existence of a stone, conceiving of the unplanned or undesigned coming together of an intricate watch is simply beyond reason. It is this reasoning he applies to the analogue of human life. To believe that the human eye, for instance, so well-designed for the purpose of vision, merely came into existence without purposeful construction defies instinct and demands explanation. In this climate, Darwin rose to the challenge.

Prior to Darwin, the concept of biological evolution had been considered but not well-developed. Darwin was the first to collect the scientific evidence necessary to confirm that biological evolution had taken place by amassing previously scattered research on the topic, and

he proposed the theory of natural selection as the most likely explanation for this process (Murphy, 1982). Natural selection—the process by which certain variances inherent in populations are perpetuated by virtue of their ability to subsist and successfully reproduce—directly addresses Paley’s call for an intelligent watchmaker. The human eye, so precisely attuned for the process of vision, is exactly what one should expect as a result of natural selection since variations that enhance individual fitness are maintained and eventually improved. Organisms without such adaptations would never have survived in a world in which competition for resources was an ever-present reality.

Natural selection, in its beautiful simplicity, requires only two main components: variation and selection (Schwartz, 1986). Variation need not be drastic but assumes subtle differences, say in speed or size, of individuals within a population. Selection operates such that variations that prove more advantageous to survival will allow those better-adapted organisms to produce more offspring who consequently share the advantageous variation. Darwin knew nothing about genetics and claimed no knowledge regarding the underlying mechanism by which variations and selection acted.

As a quintessential illustration, Schwartz (1986) cites the example of a particular light gray moth that had existed for centuries in the forests of England. Its coloration, perfectly blended with the color of the tree trunks in the area, was an adaptation that provided camouflage from predators. However, with the advent of the industrial revolution, clouds of black carbon emissions filled the forest, discoloring the tree trunks. Suddenly, gray moths were easily visible against the dark tree trunks. Within a hundred years, gray moths had essentially disappeared, replaced by black ones. Recent attempts to limit English industrial emissions have cleaned up the forests some, and, lo and behold, gray moths are beginning to return. This process occurs not

because a shrewd gray moth—seeing his fellow moths being eaten as the trees grow darker—decides to produce black offspring. Rather, moth coloring has always exhibited inherent variation, and when the tree trunks were gray, darker moths were eaten much earlier leaving only the gray ones to reproduce. As the tree trunk color changed, so did the selection contingency, and black moths began surviving longer and out-reproducing gray moths.

Decades of modern research on biological evolution have discovered and described genes as the primary replicating unit in natural selection. The case, however, may be much more general than this. Dawkins (1976) contends that Darwin's theory of natural selection, or survival of the fittest, is really a special case of a more general theory of the survival of the stable. Everywhere in the universe, the laws of physics and chemistry demand stable patterns of atoms. Anything we can point to around us, from water droplets and snowflakes to mountains and planets, are essentially stable (at least to some extent) patterns of atoms. In this sense molecules of atoms that form and exhibit stability will persist over those exhibiting lesser degrees of stability. Based on our predicted knowledge of what constituted earth before life—including water, carbon dioxide, methane, and ammonia—chemists have simulated ancient earth in flasks and bombarded these substances with energy in forms that would have been available like ultraviolet light and electric sparks. In certain experiments these flasks yield the formation of more complex molecules including the two classes of biological molecules: amino acids and the building blocks of DNA, purines and pyrimidines. It becomes highly reasonable to expect that similar results could have been expected in the primordial soup of pre-life earth.

Dawkins (1976) observes that at some point a remarkably complex molecule must have formed which possessed the ability to replicate itself. This, as Dawkins points out, is an incredibly astonishing instance, but across hundreds of millions of years—timelines human

thought cannot conceive—this replicating molecule need only have appeared once. Replication could very well have occurred by each building block of a molecule showing some ability to attract its own kind. For example, a hydrogen atom in a larger molecule might attract another lone hydrogen atom floating in the primordial soup. When this process transpires recursively layer upon layer, substances like crystals may be formed. However, if the newly attracted atoms break off once they are created, this is replication. And a replicator should show exponentially-increased stability over non-replicating molecules; for it can quickly proliferate in an environment given the proper conditions rather than constructing itself again from scratch by chance. If mistakes occur occasionally in the replication process, replication will show variation which can compound on successive replication. And some mistakes may be of greater import than others. In comparing this process to monks copying texts, Dawkins writes:

[T]he scholars of the Septuagint could at least be said to have started something big when they mistranslated the Hebrew word for “young woman” into the Greek word for “virgin,” coming up with the prophecy: “Behold a virgin shall conceive and bear a son...” (p. 16).

By this theory, the very nature of the universe is prone to variation and selection. Expecting that DNA, and therefore human life, have arisen through such a process requires only manageable conceptual leaps.

In *The Descent of Man*, Darwin (1896/1972) makes the heretical case for humankind’s descent from animals. This proposition—though now a widespread, scientifically-accepted theory—directly opposed the long-standing assumption that human beings were discontinuously unique from animals by virtue of their intellect and morality. There certainly exist qualities provable as unique to humans upon which we base no moral sense (such as kissing on the mouth during sexual intercourse), but it was thought that the qualities of intellect and morality were

those that defined human uniqueness (Murphy, 1982). A discontinuous notion of human morality demands an explanation for ultimate goodness, but we have already determined that such explanations do not hold up well. Humans have a sense of meaning and a sense of goodness, but these concepts have no extra-human objective foundation. If a relative goodness, however, can be explained by natural selection and shown to be a property of the process by which humans came into existence, humans can be shown to differ only in degree and not in kind from our evolutionary ancestors. With this knowledge, we can begin to discover the true origins of morality and meaning in pre-human organisms.

Altruism and the Origins of Morality

Before we begin our exploration into the evolutionary origins of morality, let us be clear what statements we are striving to make. If it is found that our morality is a result of naturally-selected characteristics, this does not imply a guideline by which to judge our moral foundations—an ethic of ethics if you will. Understanding the true nature of our moral sense sheds light on where our notions of goodness or rightness arise—and, presuming humans alone possess consciousness, ours are the only notions of such things. This does not imply that we lack the ability to overcome our biological nature. For example, we have a genetic proclivity to seek food with desperate attention and voracity; however, in today's world of readily accessible calories, eating as much as possible may very well harm us and the future of our genes. Evolutionary explanations cannot tell us how to live our lives. Knowing the origins of morality does imply, however, that given an acceptance of our biology and an adherence to cultural norms, we will generally be drawn to certain moral behaviors. And, in addition, the divergent moral norms we see across culture will show foundations in universally adaptive moral strategies.

Darwin, as discussed by Murphy (1982), treads lightly in proposing the origins of the moral sense, taking careful steps to distinguish morality from social instincts. He writes:

The following proposition seems to me in a high degree probable—namely, that any animal whatever, endowed with well-marked social instincts, the parental and filial affections being here included, would inevitably acquire a moral sense or conscience, as soon as its intellectual powers had become as well, or nearly as well developed, as in man. For, firstly, the social instincts lead an animal to take pleasure in the society of its fellows, to feel a certain amount of sympathy with them, and to perform various services for them (Darwin, 1972/1896, p. 98).

He does, however, admit that social instincts and the moral sense are very tightly associated and that the former may, with an admitted likelihood, give rise to the latter. Darwin goes on to state his belief that both the social instincts and moral sense are outgrowths of parental and filial affections, more commonly known in modern psychology as kin altruism.

Considering once again our discussion of replicators and the natural selection for stability, it follows that selfish units of replication—those that are better equipped to garner resources for their survival and reproduction—will be naturally selected over less selfish replicators (Dawkins, 1976; Pinker, 1997). To many people without a proper understanding of evolutionary biology, it would seem that selfish organisms should, therefore, be selected over less selfish organisms. However, organisms are not replicators; their genes are. The theory of the selfish gene (Dawkins, 1976)—the term selfish is somewhat misapplied as it anthropomorphizes an action that is not affectively motivated—states that the replicators themselves act in a way that make their replication more likely. This is a logical consequence of the process of natural selection. Those replicators better at replicating were more likely to have – replicated! This means that, in an animal with a brain, genes tend to wire the brain to feel pleasure and pain in ways that ensure its

survival (Pinker, 1997). If the same gene happens to also be present in another organism, it should therefore wire its host organism with pleasure and pain capabilities tied to the survival of the other organism as well. In sexually-reproducing organisms, each individual contains two pairs of genetic material. When two individuals reproduce together, each contributes a random set of half of his or her genes (one gene per pair) to the offspring. Therefore, individuals sharing a parent-child relationship share half their genes. Similarly, brothers and sisters share half their genetic makeup, aunt/uncles and nieces/nephews share one fourth, and first cousins share one eighth (Haidt, 2006). From the vantage point of a selfish gene, familial ties are important to ensure its own success but with diminishing returns as the degree of relation becomes farther removed. When an organism behaves in a way that benefits another organism at a cost to itself, biologists term this altruism. Kin altruism consists of altruism for a genetically-related family member and makes sense as explained by the selfish gene theory of natural selection. Kin altruism predicts that an individual ought to be willing to risk (or at least be undecided about risking) its life for two of its children or four of its grandchildren.¹

Feelings of love, sympathy, and parental nurturance are predicted by the theory of kin altruism (Frank, 2001). So are more subtle traits like menopause (Schwartz, 1986). According to an unsophisticated selfish gene theory, women should possess the ability to produce throughout their entire lifetimes, maximizing their number of offspring and the success of their genes. If, however, beyond a certain age a woman becomes too feeble to carry children and care for them into adulthood with reliable success, and may produce only one or two children from that point on. If, rather than having her own children, she aids in the care of her grandchildren, she may be

¹ The case does become more complicated when considering cross-generational relations since children and grandchildren are more likely to reproduce and to produce more offspring in the future. In these situations, elder family members are more likely to risk their own lives than predicted by the simple model. See the discussion on menopause immediately following.

able to care for seven or eight children who might otherwise not have survived. According to a sophisticated selfish gene theory, it is better to have seven or eight one-quarter relatives than to have one or two half-relatives.

Animals that live in groups are likely to be living with a large number of close and distant relatives. Nonetheless, biological research shows altruistic behavior—as is extraordinarily prevalent in humans—extends beyond familial ties. Altruism beyond kin relationships is known as reciprocity. Dawkins (1976) expounds a case of reciprocity in birds. Imagine a population of birds prone to disease-carrying ticks that must be removed as soon as possible to prevent serious illness and probable death. A bird can remove most of the ticks from its own body with its bill while preening, but cannot remove those from the top of his head. A simple solution to this problem is to beckon a fellow bird for help who can easily reach the top of your head. If the fellow bird finds a tick on its head at some point in the future that it cannot remove, the good deed can be repaid. Mutual grooming like this is mutually beneficial as long as the cost to groom another is outweighed by the benefit of being groomed. This type of grooming can be observed in many aviary and mammalian species. A problem, however, known as the free-rider problem, develops when a bird who received help in the past refuses to repay the service in the future.

Continuing Dawkins' (1976) example, consider a group of such birds in which individuals consistently employ one of two strategies: cheat and sucker. Suckers indiscriminately groom anyone who needs grooming while cheats accept grooming from suckers but never groom anyone else. In a population of only suckers, everyone helps everyone else and there is a universal benefit to all. Imagine that one cheat shows up in the population. He can count on being groomed by everyone else and never has to pay the deed back, resulting in a high payoff. While suckers in a reciprocal agreement fare better than isolated individuals, cheats who receive

benefits but never admit any costs fare best of all. Thus, cheat genes will begin to spread in successive generations. The presence of more cheaters will decrease the wellness of the entire group, but as long as cheats fare better than suckers—as they do—cheats will continue to take over the population. This process of enhancing cheaters and weeding out suckers will eventually lead to population extinction since no one can be groomed.

Consider, then, a third strategy called grudger (Dawkins, 1976). Grudgers groom anyone they meet for the first time and those who have groomed them in the past. But if anyone cheats them, grudgers remember those individuals and refuse service in the future. In a population of grudgers and suckers, everyone grooms everyone else and the group is thriving. However, in a group of cheats, one grudger will expend great energy grooming those he meets for the first time never to be groomed in return. The only way grudgers can survive as a minority in a population of cheats is to group together and groom each other. Once the grudger population passes a certain critical threshold, the likelihood of meeting another grudger increases and cheats eventually become selected out of the population. Dawkins runs several computer simulations with varying initial frequencies of the three groups and finds the following: With a population primarily of suckers, a minority of grudgers just above a critical mass, and the same size minority of cheats, the system evolves such that the cheats exploit the suckers initially, thriving in the population while driving the suckers to extinction. During this phase, the grudger population decreases, but they maintain a critical mass just large enough to survive until the last sucker dies. At this point, cheats can no longer exploit anyone, so they begin to perish and grudgers slowly begin to take over. The cheat population plummets to near extinction where cheats can eventually enjoy the benefits of rarity, finding new grudgers to groom them throughout their entire lifetime.

While this is largely a hypothetical example of the dynamics of reciprocity, it illustrates the notion that pure selfish pursuit of high payoff—as in the case of cheats—can lead to extinction, allowing groups of grudgers to survive. As long as organisms can identify individuals and keep track of their service records, the need for successful reciprocity creates a primitive moral sense in grudging individuals.

Goodness and the Origins of Groups

Note well that the picture painted in Dawkins' example above may portray the conclusion that all that is adaptive is good. Wilson (2007a) is quick to point out that naturally selected for adaptations can appear both good and evil.² To highlight this difference, he surveys his students in the beginning of the semester for words commonly associated with both good and evil. For good, his students produce synonyms such as love, sacrifice, forgiveness, and loyalty; for evil, selfishness, deceit, spite, and cowardice. It becomes clear after a moment's analysis that the traits Wilson's students associate with good—which are typical responses—are concepts related to group fitness, whereas the ideas connected with evil are related to individual fitness in opposition to the group. One might conjecture that ancient non-social organisms evolved to possess the evil traits when survival depended mostly on outdoing one's neighbor. As evolutionary forces began shifting their focus to selection of populations rather than independent individuals—as happens with the cheats, suckers, and grudgers—the traits associated with goodness became more powerful. There currently exists a debate over the validity of group selection, with leaders like Richard Dawkins denying group selection in favor of pure genetic selection. Wilson (2007b) argues well that group selection, or what is now being termed multilevel selection theory, does not deny the influence of genes over natural selection. The key point in this improved theory is

² I am largely indebted to David Sloan Wilson's *Evolution for Everyone* for the ideas expressed in this section.

that genes can survive as a result of the benefits they bestow upon entire groups. The grudging gene in Dawkins' bird example exemplifies this clearly.³

Although our eventual goal is to gain insight into subjective goodness in humans and human groups, equating the evolution of goodness with the evolution of groups requires an investigation into the origin of groups. Recall the discussion on natural selection for stability in molecules. It is clear that, from this perspective, evolution favors complexity as a form of stability. The ways in which human social groups might remotely resemble stable molecular structures seem few and ambiguous at first glance. But Wilson (2007a) presents an incredible continuum from molecules to human social groups that forces us to question our very notion of what it means to be alive.

Wilson (2007a) first claims that human groups that adopt goodness⁴ as a survival trait for their own group can act in abhorrently evil ways towards other groups. This jump—from humans as good when acting for the group and evil when undermining the group to groups as good when acting for the mega-group and evil when undermining it—sets the stage for a fascinating exploration into the nature of goodness. Wilson takes us straight to the simplest forms of life on this planet: viruses. A typical virus survives as a parasite in a more complex organism. When the virus enters a cell, it commandeers the genetic machinery of the host cell to construct replications of the viral genome rather than its own. Viruses are extremely efficient at this process, creating hundreds of copies of themselves within a single cell, each of which then travels to other cells to repeat the procedure. Occasionally, however, a copying error results in a mutant virus such that it can no longer command the cellular machinery, but it can still use resources created by other

³ Personally, though I am no expert, I feel the debate over group selection is merely a disagreement over semantics and will be resolved in favor of multilevel selection theory within a few years. For a compelling mathematical proof of group selection processes, see Henrich (2004).

⁴ Goodness here is defined as a characteristic of traits that benefit group survival and are therefore naturally selected, not the other way around. If a second human species evolved in parallel to us but only by individual genetic selection (without group selection), we would expect them to refer to our evil traits as good and our good traits as evil.

viruses and replicate itself. In fact since it lacks some of the important cell-commanding intelligence, the mutant virus has a shorter genome and can replicate faster than the originals. The mutant virus—in using the resources of other viruses without contributing to the effort of production—becomes a free-rider just as Dawkins' cheats. As long as enough of the original viruses still exist from which to steal resources, the mutant viruses will proliferate wildly, soon commanding a majority population.

Similarly, bacteria represent the simplest free-living organisms. Microbiologists have run experiments by placing a single bacterial species in a sterile liquid culture medium (Wilson, 2007a). The bacterial population will grow until there is a shortage of oxygen, yielding an advantage for mutants with oxygen-stealing adaptations. These mutants monopolize the oxygen supply by forming a mat on the surface of the medium, but they do so at the high expense of excreting a polymer that allows them to stick together. Since the cost of producing the polymer is high, free-riders evolve that focus their resources on reproducing rather than contributing to the group. Eventually, the whole mat disintegrates and falls to the bottom of the liquid.

By the very nature of replication, individual organisms tend to live in groups. Groups, however, are vulnerable to exploitation, as is apparent in the viral and bacterial examples. In contrast to the assumptions of those who doubt an evolutionary explanation to altruism is possible, social groups—even on the microbial scale—are constantly assailed by the nonexclusive forces of competition and cooperation. It is not clear whether these exploitations demonstrate moral offenses, and perhaps it should not be clear, but these examples lay the groundwork for human morality and, perhaps, meaning.

A more advanced case of group dynamics is exhibited by a cellular slime mold *Dictyostelium discoideum*, colloquially known as Dicty by the scientists who work with it (Wilson, 2007a).

Dicty is an amoeba, a single-cell organism that can alter its shape and envelops its food by engulfing it. When other species of amoeba run out of food, they turn into protective capsules and wait. Dicty, however, sends out a chemical signal, cyclic AMP or cAMP, to alert its neighbors of distress. Each organism is equipped with numerous receptors around its exterior to detect cAMP from other organisms and move towards them. A Dicty emitting its own cAMP can also detect cAMP from other cells since each cell emits cAMP in pulsed, spiral waves and synchronizes its cAMP receptors to be sensitive only when it is not emitting. This process leads to clumps of Dicty gathered together including up to a hundred thousand individual cells. The Dicty cells transform themselves into a slug-like creature—accomplished by secreting a gelatinous substance—that can detect light and travel up to twenty centimeters (an incredible distance for a single cell organism). Once the Dicty clan reaches an appropriate spot, it transforms again, standing upright like a bowling pin with some of the cells on the bottom forming an adhesive base, those in the middle forming a thin stalk, and those at the top forming a ball. This new shape vastly increases the likelihood that the ball of Dicty cells will stick to a passing insect and be transported to an entirely new location with greater food resources. This process comes at a cost, however, since the Dicty cells forming the adhesive base are left behind and lose their ability to reproduce. Two possible explanations for this extraordinarily complex behavior from a selfish gene perspective are that each Dicty cell contains similar genetic information (i.e., they are all related) or that the decision process regarding which cells end up with which duties is randomized as the cells spin in the gelatinous slug. Neither of these turns out to be true, however. The cells are often from different lines of descent, and some possess the ability to ensure their inclusion on the ball at the top. The Dicty model exemplifies a complex

social dynamic in which some organisms sacrifice their own existence for the good of the group. Selfish genes can create unselfish organisms.

It should already be clear to see the similarities (or, rather, difficult to distinguish the differences) between the Dicty slug and an actual, multi-cellular organism. Taking this intuition one step further, cell biologist Lynn Margulis has proposed a theory about eukaryotic cells—those from which plants and animals are constructed (Wilson, 2007a). Eukaryotic cells are much more complex than simple prokaryotic cells of bacteria in that their DNA is protected in a nucleus and the rest of the cell contains specialized components such as the mitochondria, chloroplasts (in plants), and the endoplasmic reticulum. Margulis hypothesizes that eukaryotic cells, rather than having evolved from prokaryotes one generation at a time, are actually the result of symbiotic relationships between specialized prokaryotic cells. In this sense, a complex eukaryotic cell is itself a social group. Wilson (2007a), takes this further still:

Working upward, multicellular organisms such as you and I are social groups of eukaryotic cells. Working downward, bacteria are social groups of genes. Like an infinite stack...everything that we recognize as an individual is also a population of subunits. We call the subunits organs, rather than organisms, because they work so well together on behalf of the whole (p. 135).

This proposition implies that we, as human beings, are only individuals in a false sense of what defines an individual. That which we typically call an individual only seems as such because the group has, with near completeness, eliminated the problem of within-group competition. We are, in fact, compositions of subunits of life which, although often normally cooperative on our behalf, can compete for their own welfare as cancer cells do in their victims.

Honeybees provide a level of group dynamics which feels much more applicable to the human case by virtue of bees being individual organisms. A honeybee colony, however, exhibits many properties we typically associate with complexity at the organism level. Wilson (2007a) presents research by Cornell professor of neurobiology and behavior Thomas Seeley who has done extensive work on honeybee colonies. In one such study, Seeley placed a hive in a forested area far from any natural flowers and installed two feeding stations, one on each side of the hive four hundred meters away. At first Seeley filled one station with a more concentrated sugar solution and, within a few hours, the colony was sending most of its workers there. Seeley then switched the concentrations and again, within a few hours, most of the bees were now visiting the other station. By marking each bee and viewing the colony through a glass panel, Seeley knew that most bees were not visiting both stations and therefore could not compare the concentrations. Rather, as a bee returned to the hive and danced to indicate the direction of the feeding station, the duration of the dance was proportional to the concentration of the solution. Bees watching the dances were not comparing dance duration either but were instead choosing a dancing bee at random and following his directions. Since the bees signaling directions to the high-sugar solution were dancing longer, they were more likely to be chosen by bees ready to receive directions since their increased dancing time biased the probability distribution. The basic social interactions of the bees lead to highly intelligent group behavior. Though it is not a direct aim of this paper, one could make obvious parallels between social behavior in bees and neurological activations. It is extremely likely that both systems followed a very similar process of natural selection.

Hive Emotions and the Origins of Culture

Haidt (2006) maintains that human groups are very much like the ultrasocial groups of social insects (i.e., groups that act as organisms) save for the ability of each human in a group to reproduce individually—which is not true of sterile honeybee workers born from a single queen bee. The additionally fundamental difference in humans that separates us from both insects and our primate relatives is culture, and culture—as a unit of replication with copying errors—follows a process of natural selection as well. To determine the origins of culture and the unique brand of human ultrasociality, the nature of the differences between humans and our closest researchable relatives, the other living great apes (chimps, bonobos, gorillas, and orangutans), must be clarified. Human morality and culture is heavily influenced by a concept of equality, akin to an imaginary society of Dawkins' grudgers. Anthropologist Robert Lee describes an encounter with a member of the !Kung San tribe in the Kalahari Desert of southern Africa,

[Lee quoting the tribesman] "Say that a man has been hunting. He must not come home and announce like a braggart, 'I have killed a big one in the bush!' He must first sit down in silence until I or someone else comes up to his fire and asks 'What did you see today?' He replies quietly, 'Ah, I'm no good for hunting. I saw nothing at all... maybe just a tiny one.' Then I smile to myself because now I know he has killed something big." The jesting continues when they go to retrieve the dead animal: "You mean to say you have dragged us all the way out here to make us cart home your pile of bones? Oh, if I had known it was this thin I wouldn't have come'... When a young man kills much meat, he comes to think of himself as a chief or a big man, and he thinks of the rest of us as his servants or inferiors. We can't accept this. We refuse one who boasts, for someday his pride will make him kill

somebody. So we always speak of his meat as worthless. In this way we cool his heart and make him gentle (as cited in Wilson, 2007a, p. 156).

Groups of chimps operate quite differently, organizing themselves hierarchically based upon aggressive domination. The processes involved remain highly social. Dominant chimps exhibit a modicum of respect as they steal food from subordinate chimps having been shown to leave their target with some food for himself (Wilson, 2007a). The only significant difference, however, between small-scale human groups and chimpanzee societies is the distribution of power; if chimps had a method of defending themselves from others more effectively, they might become more egalitarian like humans. One hypothesis for such a defense is the ability to throw stones (Bingham, 1999). Our chimp ancestors—who initially developed stone-throwing as a means of protection from predators or a procedure for hunting—may have used stone throwing to defend themselves from the social transgressions of stronger chimps who could defeat them in a face-to-face encounter.

Whether or not stone throwing was the key transition towards human development, chimps must have adopted some system of social control mechanisms in a shift toward egalitarianism and democracy. Campbell (1982) describes a theory of social control mechanisms that requires four key components: mutual monitoring, internalized restraint, legal control, and market mechanisms. The first two processes, mutual monitoring and internalized restraint, represent the abilities of groups to detect violations and enforce sanctions regarding both other group members and oneself. The initial steps to self defense in chimps built upon already existing predispositions for mutual monitoring (Boehm, 1999). Both mechanisms are regulated by emotions such as shame, pride, and guilt.

This theory merges well with current social psychological research on the functionality of emotions. Perhaps as a result of the behaviorist movement that dominated psychology for a large portion of the mid-20th century, emotions were typically defined as responses to stimuli. An evolutionary account by Keltner, Haidt, and Shiota (2006), on the other hand, suggests that emotions play functional roles in enabling individuals to best respond to challenges and opportunities in their environment. These researchers—while stressing that emotions operate at the level of individuals, dyads, groups, and cultures—have developed a taxonomy of functional emotions grounded on problems of survival. For instance, a problem of reproduction involves finding a mate. The taxonomy associates two functional systems with this problem, namely sex and attachment. The emotion of sexual desire serves to increase the likelihood of sexual contact while the emotion of love increases the commitment to a long-term bond. Group organization structures that demand a dominance hierarchy—as found in apes—are mediated by pride (displaying high status), shame (displaying reduced status), embarrassment (pacifying a likely aggressor), contempt (reducing another’s status), awe (endowing an entity greater than oneself with status), and disgust (avoiding group members who violate cultural values). Similarly, the problem of group cooperation in humans requires the system of reciprocal altruism which is moderated by gratitude (as a signal or reward of a cooperative bond), guilt (functioning to repairs one’s own transgression of reciprocity), anger (motivating others to repair their transgression), and envy (reducing unfair differences that threaten equality). Both the emotions of pair bonds and the emotions of group dynamics are tied to a functionality of (and were likely selected due to their benefits for) social relations. Haidt (2006) terms these the hive emotions.

The struggle between the emotions that call for hierarchy and the emotions that call for egalitarianism led Haidt (2006) to create (what begins as) a two-dimensional model of social

space with axes for hierarchy and closeness or liking. These dimensions correspond to the ethic of autonomy and the ethic of community respectively and represent the evolutionary struggle between selfish competition and selfless cooperation. Haidt suggests that many languages have separate verbal forms that correspond to this model (as in the French *tu*, which signals subordinates or friends, and *vous*, which signals superiors and strangers).

While there exists sound evidence for these two dimensions, Haidt (2006) proposes a third dimension that he terms the ethic of divinity. The ethic of autonomy—present when evolution operates at the level of an individual—motivates the protection of individuals from harm and grants them liberty. The ethic of community—present when evolution operates at the level of a group of individuals—protects the integrity of social units such as families or nations (or perhaps multi-cellular bodies) and their virtues such as obedience and loyalty. The ethic of divinity—which it seems may operate within the domain of cultural group selection in multilevel selection theory—values that which is pure and holy in individuals and serves to protect them from such moral impurities as lust and greed. Divinity opposes the emotion of disgust which can be triggered in the domains of “food, body products, animals, sexual behaviors, contact with death or corpses, violations of the exterior envelope of the body (including gore and deformity), poor hygiene, interpersonal contamination (contact with unsavory human beings), and certain moral offenses” (Rozin, Haidt, & McCauley, 2000, p. 637). All of these disgust elicitors appear to be harmful contaminants—either to individual fitness (in the case of bacterial infections) or group fitness (in the case of interpersonal and moral components)—that could be avoided if one could learn to avoid them. Culture solves this challenge. Haidt (2006) claims that sacredness and the moral emotion of elevation—a sense of uplift upon viewing a morally heroic deed—are related

to the positive end of the divinity dimension. Feelings of sacredness and elevation may be the next generation of evolutionary adaptations that came about as a result of human culture.

Boyd and Richerson (2006) propose a couple of hypotheses regarding the ways in which humans were able to capitalize on naturally selected mechanisms of cooperation once hive emotions developed. They propose first that greater human cognitive abilities—including the ability for symbolic thought—and the development of language allowed humans to manage large cooperative groups with a moralistic reciprocity that punished free-riders and thus enhanced group fitness. Language may, according to some theories, have evolved specifically for the purposes of gossip about the moral heroism and transgressions of others (Dunbar, 1996). Secondly, the advent of language and cognition made possible culture and a cultural transmission process. An old theory of evolution, called Lamarckism, stated that adaptations adopted during one's lifetime were passed to offspring. In this now defunct model, an organism that changes in a certain way over his life or learns something valuable that enhance its chances of survival can pass those benefits to its progeny. Scientists now know that genetic information is determined at birth and not changed—except through potential random mutation—throughout one's life. The birth of human culture, however, solved this problem of Lamarckism in that humans could pass on knowledge they had gained throughout their lifetime. Although cultural transmission originally evolved as a mechanism to moderate systems of moralistic reciprocity, it is likely that human groups with the ability to pass down acquired knowledge from one generation to the next quickly surpassed groups lacking this ability. Culture establishes within a group a constant building up of knowledge such that each new generation finds itself at a higher starting point and can make additional intellectual contributions.

Henrich (2004) claims that cultural group selection operates differently than genetic group selection. Consider a world in which two groups of individuals exist in close proximity to one another and each has a high concentration of a certain trait. Let us assume the first group has a high proportion of cooperators and the second group has a high proportion of non-cooperators. Since cooperation is good for group survival, the former group generally functions better and outlasts the latter group. If the trait of cooperativeness is genetically determined, however, the trait can be passed only to offspring. If in each generation, a small percentage of individuals switches groups, the non-cooperators can quickly become destructive free-riders in the cooperative group. It requires only a small initial number of individuals switching groups to drive the cooperation trait to extinction. If, on the other hand, cooperativeness is a culturally determined trait, the cooperative group has learned that they thrive better as a whole by working together and they can share this information with any newcomers to the group—whether they are offspring of group members or foreigners. In this way, cultural group selection allows for the proliferation of more fragile or susceptible traits and on a much faster timescale than generation-by-generation genetic selection. Natural selection within the domain of culture is both unique to humans and what makes humans unique, but requires a motivation to imitate, learn from, and share knowledge with others within one's social group.

Transcendence and the Origins of Meaning

The dawn of culture and cultural evolution in humans came as a major shift in the progression of evolution and brought forth numerous advances. Among these, most notably, were religion, transcendence, and subjective meaning. A member of the Hutterite faith, a Christian Anabaptist sect, writes:

True love means growth for the whole organism, whose members are all interdependent and serve each other. That is the outward form of the inner working of the Spirit, the organism of the Body governed by Christ. We see the same thing among the bees, who all work with equal zeal gathering honey (as cited in Wilson, 2007a, p. 235).

In *Keeping Together In Time: Dance and Drill in Human History*, William McNeill (1995) describes his experiences in the United States Army's basic training in Texas in 1941. His battalion was short on supplies—they owned only one anti-aircraft gun which all new recruits were expected to master—so the officers had to invent activities to keep them busy. When the group ran out of training videos, the officers often sent them to march in formation on the dusty plain. McNeill admits that he could imagine no activity more useless given the technological standard of warfare at the time. However, his opinion soon changed:

Marching aimlessly about on the drill field, swaggering in conformity with prescribed military postures, conscious only of keeping in step so as to make the next move correctly and in time somehow felt good. Words are inadequate to describe the emotion aroused by the prolonged movement in unison that drilling involved. A sense of pervasive well-being is what I recall; more specifically, a strange sense of personal enlargement; a sort of swelling out, becoming bigger than life, thanks to participation in collective ritual (McNeill, 1995, p. 2).

Both of these examples illustrate a sense of oneness or a transcendence of self that may be an innate ability in humans as a result of cultural group selection.

The Hutterite excerpt represents the extent to which natural selection encouraged the development of religion and religious beliefs. One hypothesis regarding the origins of religion claims that religions survive as parasitic, self-serving memes—the replicating units of cultural evolution like stories passed down through generations—such that they need not necessarily

benefit humans in anyway (Dawkins, 1976; Dennett, 1995). Alternatively, religion may be a by-product of other more useful evolutionary adaptations or an adaptation that only served us well at an earlier point in our developmental history. Wilson (2007a) takes offense to these hypotheses and suggests as counterevidence the formation of Calvinism in 1530's Geneva. He recounts that, during the Protestant Reformation, Geneva had recently gained independence from the Roman Catholic Church but, in its newfound freedom, lacked organization and depended on the Swiss Confederacy for military support. Geneva craved full independence but could not come together despite a democratically-elected government. Upon request of the leading reformers, John Calvin helped draft a new religious agenda for the city. Due to the religion's restraints on autonomy—similar to those that initially infuriated the reformers—Calvin was expelled from Geneva for three years. In the absence of religion, however, the city continued to disintegrate, and not until Calvinism was adopted did Geneva overcome factionalism and ultimately thrive.

Beyond transmitting a faith in the supernatural, religions also build strong communities, encourage helping others and being helped in return, pass on values to future generations, and allow for the possibility of transformative change (Wilson, 2007a). In these ways religion clearly serves as a functional mechanism of cultural group selection. Wilson notes, additionally, that many religious concepts may even serve to overcome the genetically-designed competing drives for individual welfare and group welfare by redefining selfishness. He finds that in many world religions, actions that benefit the self at a cost to the group are often termed selfish while actions that benefit the group at a cost to the self are considered unselfish. In this way, religions allow an individual to reframe deeds of sacrifice as actions that benefits himself as well. To the extent that cultural group selection would prefer groups who are able produce adaptive synergistic outcomes, religion may aid in the willingness of individuals to sacrifice for the good of the

whole. It is, perhaps, in this light that His Holiness the Dalai Lama of Tibet teaches compassion as the highest virtue of humankind.

With this ability to invest in something larger at a cost to the self comes a feeling of transcendence. Many religions seek, as ultimate ends, higher states of consciousness and those who claim to have experienced such states often find them incommunicable (James, 1902/1958). Haidt (2006) cites research by Abraham Maslow on subjective reports of peak experiences during those moments of fantastic self-transcendence such that life feels qualitatively different. These experiences often yield commonalities that include a sense of the universe as a unified whole without judgment, the disappearance of goal-striving and egocentrism as the individual feels merged with all things, distorted perceptions of time and space, and feelings of wonder, awe, joy, love, and gratitude. Haidt (2006) continues:

Maslow's goal was to demonstrate that spiritual life has a naturalistic meaning, that peak experiences are a basic fact about the human mind. In all eras and all cultures, many people have had these experiences, and Maslow suggested that all religions are based on the insights of somebody's peak experience. Peak experiences make people nobler...and religions were created as methods of promoting peak experiences and then maximizing their ennobling powers (p. 205).

Wilson (2007a) argues that understanding any natural adaptation requires two explanations: a proximate explanation and an ultimate explanation. Recalling the examples of functional emotions, we can ask: why does one feel guilt? The ultimate explanation—the kind on which we have focused most to this point, as they yield insight into origins—follows the logic of expressing reparation for an altruistic transgression to another member of one's social group thereby increasing the group's overall survival fitness. The proximate explanation is that a series

of biochemical reactions and electric connections occur in one's brain creating the subjective state we feel as guilt. Wilson (2007a) adds:

I have spoken with many religious believers who feel that my focus on practical benefits misses the essence of the religious experience, which is a deeply felt relationship with God. I agree with them as far as the *psychological* [Wilson's italics] religious experience is concerned, but that is exactly what the proximate/ultimate distinction leads us to expect. I could be right that religion is all about practical benefits in terms of what religious beliefs cause people to do (the ultimate explanation...), and they could be right that their own religious experience is based far more on their relationship with God than on practical benefits for themselves or anyone else (the proximate explanation...). The proximate explanation need not bear any relationship to the ultimate explanation other than reliably causing the right behavior, [as in the case of feeling guilt]...By the same token, people fall in love in part to have children (an ultimate explanation), but that doesn't remotely describe the subjective experience of falling in love (the proximate explanation) (p. 257).

The ultimate explanation regarding why we transcend ourselves may be grounded in the demands of survival through a process of cultural group selection. Culture allows adaptive traits to spread quickly through a group thus enhancing its fitness. Feelings of transcendence motivate people to attend to informational cues beyond themselves, particularly to what evolutionary biologists refer to as culture. In order for humans to develop a system to pass along information through culture, individuals needed to feel a motivation to seek out and to share knowledge with others. Subjective meaning, as perceived by individuals, may be this trait that coevolved with culture as an impetus for human imitation and learning of culture in social contexts. For pre-human primates to be motivated to seek out social cues in others as a source of information and

to share acquired knowledge, a sense of meaning or purpose around knowledge and interpersonal connection must have been present. Evolutionary processes selected for humans who both survived and thrived by losing a sense of self in the pursuit of something larger which, often, consisted of the society and culture to which they belonged. A subjective state of a sense of meaning or purpose in life (or a desire for such a state) serves as the proximate explanation to comprehending why we transcend ourselves. These pursuits encouraged by subjective meaning encompass the wonders of human architecture, economy, and technology as well as the tragedies of human warfare, all of which were successful adaptations in natural selection between groups at one point in our evolutionary history.

Modern forms of meaning (e.g., achievement-based or artistic meaning) may be distinct from the type of meaning selected for in pre-human groups, but these forms all result from a transcendence of self in the realm of culture and cultural learning. It is suggested, though the proof is beyond the scope of this paper, that all modern forms of meaning are the results of processes required by cultural evolution within social contexts and differences among these other forms of meaning are superficial and predictable by cultural norms.

Conclusion

The psychology of meaning is certainly an illusive topic and one that has only recently invoked serious scientific inquiry. We must be careful to note that the conclusions about the evolutionary nature of our ethics should not guide our choice of ethics as if to provide an ultimate or objective morality. The terrorists who attacked the United States on September 11, 2001 were presumably motivated by their evolutionarily-designed concepts of meaning and the contribution they believed their actions would make to their religious community. (And if we lived in a world where competition for resources and survival was fierce, a culture that breeds

such commitment might be naturally selected over ours.) We cannot consider these actions morally defensible due to their origins in human nature. The logical fallacies of proofs of an ultimate morality presented earlier should safeguard against that conclusion. In revealing these fallacies, Murphy (1982) simultaneously admits, however, that this conclusion purports that life and the foundations upon which we deem our lives valuable and meaningful may indeed be absurd. Taking his conclusion as true, one can face this realization in one of two ways. One can conclude that a life without ultimate purpose or significance is a life whose sobering abjectness and horror encourages either inevitable disorder or hopelessness. Or—as one might hope positive psychology would encourage us to do—one could feel as he has felt all along; that subjective meaning exists where one finds it: in compassionate acts for fellow humankind, in service of the planet on which we are blessed to live, and—so it seems—in contributing to the ever-increasing order and goodness of the universe.

Extrapolating modern evolutionary theory to the origins of life—and perhaps the universe itself—provides, if anything, clues to a subtle yet consistent reliance on building up. In the quest for survival stability, beginning at the molecular and perhaps atomic level, complexity has shown a cosmic resilience. One could consider, as mere speculation, that life itself may serve as the opposing force of entropy in the universe, collecting free energy and building complexity (see Schrödinger, 1944). This idea brings very much to life the conclusions made by Seligman (2002) in his remarks defining meaning as the outcome of a win-win game, or one in which two parties mutually benefit from participation. Mutually beneficial outcomes are the key to understanding multilevel selection theory and Seligman's hypothesis that meaning builds upon the knowledge, power, and goodness in the world.

The analysis of evolutionary forces at many levels of nature portrays three distinct layers of natural selection directly relevant to human evolution: within-group genetic selection, between-group genetic selection, and between-group cultural selection. Primitive social groups were the first to take advantage of genetic group selection much as humans have been the first to take advantage of cultural group selection. The three competing layers of evolution imply a degree of complexity and internal conflict in all humans. The motto of the modern French Republic is an adapted version of a slogan popular among French revolutionaries that represents a sturdy notion of the requirements of a human society (Csikszentmihalyi, 1993). The slogan reads: *Liberté, égalité, fraternité, ou la mort!* (Freedom, equality, brotherhood, or death!). Evolutionary forces along the three layers of selection have instilled in us the values of freedom (within-group selection), equality (genetic group selection), and brotherhood (cultural group selection). In a game of survival, human groups possessing fewer or less of these qualities were surely more likely to face death.

Taking this analogy one step further, one might find that the tripartite theory of well-being that grounds positive psychology fits here as well. Engagement or flow challenges and absorbs individuals to improve themselves, increasing their skills and consequently their chances in a game of individual selection. This would make flow the most ancient and basic form of happiness, and positive psychology research on the unemotional aspects of flow may support this claim (Csikszentmihalyi, 1990). Emotions, including positive ones, moderate social relations and ensure protection from free-riders in an altruistic society. Survival in a game of genetic group selection requires emotional fitness. These hypotheses, though fun to consider, demand further investigation.

We have argued, however, that meaning embodies transcendence and the motivation to sacrifice one's individuality for the good of the greater community. Immense and elaborate social collaboration, which became possible with the inventions of language and culture, is only possible if group members are willing to work together for the benefit of something beyond themselves. Individuals capable of experiencing meaning—and, therefore, transcending themselves to become a part of something larger—win in a game of cultural group selection.

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