

EMBODIED AND EMBEDDED MORALITY: DIVINITY, IDENTITY, AND DISGUST

by Heather Looy

Abstract. Our understanding of human morality would benefit from an integrated interdisciplinary approach, built on the assumption that human beings are multidimensional unities with real, irreducible, and mutually interdependent spiritual, relational, emotional, rational, and physiological aspects. We could integrate relevant information from neurobiological, psychosocial, and theological perspectives, avoiding unnecessary reductionism and naturalism. This approach is modeled by addressing the particular limited role of disgust in morality. Psychosocial research reveals disgust as a universal emotion that enables evaluation and regulation of certain moral behaviors and is involved in cultural identity. Theologically, many religious traditions, including the Judeo-Christian, use disgust in conjunction with moral codes designed to preserve purity and communal identity as the people of God. The concept of natural moral law suggests that morality is embodied in human nature. Neurobiology is beginning to trace the neural circuitry involved in disgust and in moral evaluation, suggesting that emotions are a necessary basis for moral judgment and revealing intriguing relationships between disgust, morality, and other aspects of the psyche. Several problems that arise within these disciplines and at their intersections are identified. Extension of the model to other aspects of human morality would further illuminate our understanding of morality without sacrificing its complexity and richness.

Keywords: disgust; emotions; human nature; interdisciplinary; morality; natural moral law; neurobiology; psychology; theology.

Humans are moral beings. We have the capacity, tendency, and motivation to evaluate objects, events, and behaviors as good or bad, right or wrong. Thus, a moral sensibility seems to be part of human nature. Of

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course, *what* is judged as good or bad varies across historical, cultural, and religious locations. These “moral codes” are passionately embraced as expressions of the truth of human nature and purpose. Some scholars argue that moral sensibility and the resulting moral codes function to motivate and regulate human behavior, facilitating interpersonal interactions, social cohesion, cultural and religious identity, and/or, indirectly, survival (see Damasio 1994; Douglas 1966; Haidt 2001). At the same time, differences in moral codes underlie many current and historical conflicts in public policy, criminal justice, interreligious dialogue, and global politics.

It is partly because of such conflicts that philosophers, theologians, anthropologists, psychologists, and more recently evolutionary biologists and neuroscientists have sought a deeper understanding of the sources, functions, and nature of human morality. That this task has borne limited fruit attests to the subtlety and complexity of morality. Adding to the challenge is the fact that scholars bring different worldviews and disciplinary allegiances to their investigations. Some understand morality as evolved neurobiological processes manifested in psychobehavioral adaptations that ultimately serve the interests of our genes. In the extreme, notions of altruism, of religious hope and calling, of “good” and “bad,” are ultimately illusions created by our genes to ensure the reproductive success of their socially complex carriers (us) so that the genes replicate and multiply. Others view moral codes as sociocultural constructions that are unconstrained by evolutionary biology, neural organization, or transcendent truth. These human constructions mediate social interactions and contribute to social stability, but as long as they serve these functions their particular character is arbitrary. Some argue that morality is a property of a disembodied human rationality, while others add the condition that it emerges through correct relationship with a nonmaterial, supernatural divinity who determines and communicates moral laws.

This admittedly oversimplified list reveals a diversity of perspectives on human morality, each of which involves, in my view, an unnecessary degree of reductionism and simplification. Is it not possible that human morality contains elements of all of these approaches? I believe that there is tremendous potential to enrich and transform our understanding of human morality through interdisciplinary investigations.

Interdisciplinary investigations have been much discussed and encouraged in recent years, but they are remarkably difficult to achieve. Differences in language, history, methodologies, and theoretical frameworks are obstacles to meaningful cross-talk and mutual illumination of shared questions. Further, more foundational differences in worldviews, such as those noted earlier, and conflicting views of human nature mean that scholars are asking different questions and looking for the answers in very different places. For example, some scholars give exclusive attention to physical

mechanisms, while others presume that we are freely choosing and self-aware in our moral decisions and therefore focus on rational processes.

Because of these differences, to have any hope of achieving a meaningful integration that will actually illuminate our understanding of morality, we must have some kind of reference point from which to do the integrating, and it may not be easy to agree on what that point is. Nevertheless, I propose as one possible reference point a view of human nature as a *multi-dimensional unity* (see Anderson 1998; Brown 1998; Jeeves 1997, 98–126) that includes real, irreducible, and mutually interdependent spiritual, relational, emotional, rational, and physiological aspects. This unity is unique among living things, characterized as it is by self-awareness and our ability to consciously anticipate and act to influence the future. Indeed, moral sensibility and moral codes are concepts that could only emerge from a self-aware and conscious species. I intend to demonstrate that this starting point can lead to fruitful interdisciplinary investigations of a complex concept such as human morality. This view of human nature does not require us to privilege one way of knowing or one source of knowledge but rather invites interdisciplinary investigations that allow us to take seriously evidence from all of the natural and social sciences, theology, philosophy, and human experience.

To paint with very broad strokes: First, as physical beings, we perceive, learn, and enact moral behavior and evaluations through our bodies—our sensory and motor systems and of course our brains. Our characteristic moral sensibility will be manifested in particular physiological, and most likely neurological, systems and mechanisms. Further, as physical beings part of a dynamic physical creation, it is possible that our moral sensibility or some of its basic elements have a genetic component that has been naturally selected over human evolutionary history because it contributed materially to survival and reproductive success. Second, moral sensibility is likely to involve reasoning and emotional responses, as it leads to judgments of value. Thus, understanding our rational and emotive abilities and their interactions should illuminate morality. Third, we are relational beings. Moral behavior and evaluations are both learned and expressed in complex social interactions, and indeed a capacity for moral judgment is meaningless outside a sociocultural context. We need to understand how our moral sensibility is shaped through enculturation and how its application functions in relationships between individuals and among communities. Fourth, we are spiritual beings. Most humans persist in believing that there is something that transcends the material—a “life force,” God, love—and imbues existence with meaning and purpose. Our attempts to understand that meaning and purpose and to live in ways that express these as fully as possible lead, among other things, to particular moral codes.

But is it possible to go beyond such independent descriptions of the neural, genetic, evolutionary, rational, emotional, relational, and spiritual aspects of human morality? How might we integrate these independent insights? How might insights from one perspective influence and illuminate those from other perspectives? Instead of elevating (or reducing) any one of these perspectives to subsume the others, the recognition that these are indeed *aspects* of a unified human identity is at least a place to begin.

To apply the general approach described in the previous two paragraphs, I attempt to lay out, still in rather general terms, some of the relevant scholarship and questions related to one small slice of human morality. As a biopsychologist, my tendency is to begin with individual embodied psychological experience. I do not privilege this over other relevant aspects, nor do I reduce morality to this dimension. This is merely my point of entry into this task.

More specifically, in this essay I focus on the emotion of disgust. Disgust is deeply rooted in our bodies, both viscerally and neurally, and therefore reflects our embodiment and evolutionary history. Disgust is a “moral emotion”—that is, its particular function is to facilitate evaluations of good and bad, rightness or wrongness, and to motivate and direct behavior away from the bad. The triggers of disgust are learned in community and play a crucial role in cultural identity, revealing our embeddedness and relationality. Finally, many disgust triggers are linked explicitly to divine expectations and demands, reflecting human spirituality.

We cannot understand the nature and meaning of disgust and its role in human morality without taking seriously all of these dimensions. Thus, a systematic study of disgust from multiple perspectives would enrich our understanding of human morality as simultaneously embodied, culturally embedded, and spiritual. It further provides a model for scholars to explore the roles of other emotional, perceptual, cognitive, and neural processes involved in human morality, for indeed disgust plays a relatively small, albeit important, role in human morality. I choose it in part for this very reason: its role may be sufficiently constrained and identifiable to be manageable in this initial attempt at interdisciplinary integration. Thus, in this essay I outline the application of this interdisciplinary model to disgust, identify the major issues, questions, contributions, and problems that the social sciences, theology, and neurobiology have to offer, and invite scholars with expertise in these fields to respond.

DISGUST AS A MORAL EMOTION: PSYCHOSOCIAL PERSPECTIVES

The dominant view of human morality, both historically and at present, is that both moral behavior and moral judgment are direct results of moral reasoning, a conscious rational process that unfolds in predictable developmental stages (Gilligan 1982; Haidt 2001; Kohlberg 1971). An alter-

native perspective, dating back at least to the philosopher David Hume ([1777] 1960), argues that moral behavior and judgment are rooted in emotional responses. This alternative has recently gained considerable validation from psychosocial and neurobiological research (Damasio 1994; Greene, Sommerville, Nystrom, Darley, and Cohen 2001; Haidt 2001). Cross-cultural studies suggest that moral evaluations are best predicted by emotional response, a “gut reaction” which is then justified rationally (Haidt and Hersh 2001; Haidt, Koller, and Dias 1993).

The emotions associated with moral behavior and judgments include at least awe, elevation, fear, guilt, contempt, anger, and disgust. Disgust has generated considerable recent interest (Haidt 2003; Haidt, Rozin, McCauley, and Imada 1997; Rozin, Lowery, Imada, and Haidt 1999; Rozin, Markwith, and Stoess 1997). Disgust is considered one of the basic human emotions (Ekman 1992) because it is universally experienced as a visceral rejection, even nausea, and is universally recognized through its distinctive facial expression (Rozin, Lowery, and Ebert 1994; Steiner 1979). “Core disgust” (Rozin and Fallon 1987) has roots in an innate rejection of bitter tastes, evident in other mammals and in human neonates (Steiner 1979). This innate response has obvious survival benefits, since bitter-tasting substances are less likely to be nutritious and more likely to bear toxins than sweet-tasting substances. However, in humans this “emotion of rejection” becomes highly elaborated, extending far beyond immediate physical survival. Thus, a basic emotion becomes a “secondary emotion,” triggered by stimuli unrelated to immediate survival through association and enculturation (Damasio 1994, 134–39).

Triggers of disgust are learned. Young children express disgust solely to bitter tastes, yet by eight to twelve years of age they have adopted the full array of adult disgust triggers in their particular culture (Rozin and Fallon 1987). Globally, disgust triggers fall into one of seven categories: body envelope violations, sex taboos, food taboos, animals, body products, death, hygiene, interpersonal contamination, and social disgust (Rozin, Haidt, and McCauley 2000). However, the specific objects, events, and behaviors within these categories that elicit disgust vary across cultural contexts. These include, for North Americans, eating human flesh, seeing an eviscerated dead body, engaging in an incestuous relationship, spitting upon another person, or eating insects (Rozin and Fallon 1987; Wood and Looy 2000).

Through socialization, children also learn that disgust triggers are defined by their context. For example, while normally contact with feces is disgusting, the act of caring for a young infant both renders the feces somewhat less disgusting and, more important, releases the caregiver from moral condemnation for the contact. Further, disgusting acts performed under coercion confer less impurity than if one is perceived as having a choice.

EMBEDDED MORALITY: THE FUNCTIONS OF DISGUST

J. Haidt and colleagues (1997) argue persuasively that the triggers of disgust are things that remind us forcibly of the animalness of our nature and therefore of our impurity and degradation. Disgust, therefore, "is best understood as the guardian of the temple of the body," a vehicle by which our humanity is preserved (1997, 114; see also Miller 1997).

Violations of the "temple of the body," forms of spiritual pollution, are *moral* violations. These are, of course, not the only class of moral violations. R. A. Shweder and colleagues (1997) propose that we classify moral codes as reflecting *autonomy*, *community*, or *divinity*. Violations within each of these codes are associated primarily with a particular emotion—anger, contempt, and disgust respectively (Rozin et al. 1999). Autonomy emphasizes individual rights and preferences, while community focuses on one's social role and the importance of sustaining social systems and institutions. These are important dimensions of human morality, but it is the divinity code that is associated with disgust. The divinity code encompasses the ideas of purity and pollution, natural law, sin, and defilement.

The divinity code has been explored by several social scientists, among them anthropologists (Douglas 1966; Shweder et al. 1997) and psychologists (e.g., Rozin et al. 1999). It also appears in philosophical and theological discourse on ethics (Kekes 1992; Stout 1988). These scholars have convincingly established the existence of a divinity-based moral code, present to some degree in all studied human cultures. Further, P. Rozin and colleagues (1999) have empirically demonstrated a specific connection between violations of the divinity code and disgust. Haidt argues that disgust is "the paradigmatic emotion of spiritual pollution" (Haidt 2003).

Although some scholars have argued that the concepts of purity and pollution are a kind of hygiene system related to survival and physical well-being (see Bashford 1998), most agree that they are rightly subsumed under a divinity code that reflects human spirituality and adherence to a particular faith or worldview (Choksy 1989; Douglas 1966). Its existence suggests that we humans collectively perceive ourselves as embedded in a universe that has a particular structure and that our identity is tied to that structure in such a way that violations not only make us impure or sinful but strip us of that identity (Douglas 1966). This is seen in cultural and religious communities as diverse as ancient Greece (Parker 1983), the Bedouin (Abu-Lughod 1986), Hindu India (Das 1985), Zoroastrianism (Choksy 1989), early Christianity (deSilva 2000), both ancient and modern Judaism (Eilberg-Schwartz 1992; Wright 1992), and, Haidt argues, present in modern Western culture (Haidt 2003). For example, the Hebrew scriptures claim that God's law is given to a particular community for particular purposes, including a strong sense of communal identity and direction. Individuals who violate this law require cleansing, which can involve particular rituals, temporary or permanent ostracism, or even death

in an effort to preserve not only the individual's identity but that of the entire community (Douglas 1966; Wright 1992).

That the concepts of purity and pollution as they relate to cultural identity and spiritual obedience are associated with disgust is suggested by the fact that laws concerning these concepts focus on precisely the seven categories of disgust elicitors identified cross-culturally by psychological researchers (Rozin, Haidt, and McCauley 2000). Further, violations of the purity laws are associated with words such as *abhorrent*, *defilement*, and *abomination*, all synonymous with or related to disgust (Kekes 1992; Stout 1998, 145–62; Wasserfall 1992). For example, in Leviticus, violations of Hebrew laws are frequently described as abominations (Leviticus 11:13, 18). The Hebrew prophets Isaiah, Jeremiah, Ezekiel, and Amos called acts of disobedience abominations in God's sight. The psalms speak of the faithless as disgusting (Psalm 119:158), and the Christian scriptures speak of God spitting out those who have a weak or equivocal commitment to living the faith, a classic disgust reaction (Revelation 3:16).

Whether disgust as understood by psychologists is indeed the emotional experience associated with violations of the divinity code in all of these contexts is an empirical question that needs to be addressed. For example, a Jewish colleague has suggested that the terms translated “disgust” and “unclean” in Jewish tradition may not map directly onto the concept of disgust presented here and developed further in the work of Rozin and Haidt (Spero 2001). Nevertheless, this initial examination of the function of disgust suggests that humans tend to use the language of disgust in relation to the concepts of purity and pollution, albeit perhaps not exclusively. This implies that one major function of disgust is to facilitate adherence to moral laws that reflect the divinely created structure of the universe and divine expectations of human activity. This is important not only to appropriately respond to God or the gods or the universe as this is understood within a particular culture or religious community but also to maintain cultural identity.

The importance of behaving in ways that preserve cultural identity and the roles of morality and disgust in this process are seen very clearly with food. There is a vast array of edible, nourishing substances available to every cultural group, yet without exception a given culture will accept only a limited subset. People who eat substances rejected by a particular culture are confirmed as outsiders or at least viewed as deviant. For example, the English once scorned the French for eating frogs and snails, the Dutch abhor corn as human food but happily consume horse meat, and most North Americans think that anyone who voluntarily eats dogs, guinea pigs, or insects (and there are many who do) must be “primitive, barbaric, or desperate” (Forsyth 1994, 63). Notice that these are *moral* evaluations: particular foods are morally good or bad with regard to their role as hallmarks of community membership and confer this quality to the people

who eat them. Disgust acts as a signal that eating this particular food is morally wrong.

Thus disgust enables one to maintain cultural identity and purity by effectively avoiding or rejecting anything that might threaten it. Disgust keeps one accepted within the community and recognizable as one of "our own." This sense of belonging is vital for human development and psychological well-being. The fact that feral children, developing apart from human community, reportedly fail to show any disgust response is a case in point (Malson, cited in Haidt et al. 1997).

EMBODIED MORALITY: NATURAL MORAL LAW

If we seriously believe that human nature is a multidimensional unity, we would expect disgust and morality to be reflected in the physical aspects of our nature. In theology, the concept of natural moral law refers to the belief that the universal human capacity to engage in moral judgment is innately embedded in human nature. Aristotle argued that everything has a *telos*, or final purpose, and any action that moves something toward its final purpose is "good." Medieval theologians, particularly Thomas Aquinas, drew on this idea to argue that God placed laws into creation that, if obeyed, would lead humans to their highest good or final purpose. The Hebrew and Christian scriptures suggest that these laws are known to us when they speak of God's law being written on people's hearts (Jeremiah 31:33; Romans 2:14–15; Hebrews 8:10, 10:15). The concepts of common grace and general revelation within the Christian tradition also capture the idea that God has placed within humankind the capacity to discern right from wrong and a general agreement about what *is* right and wrong. However, natural moral laws differ from other laws of nature in that while humans have the capacity to discern and obey them, we are not compelled to do so but have the freedom to disobey them (Lewis 1942).

This concept of natural moral law is controversial, at least in the Christian tradition. The notion that God writes this knowledge on people's hearts can be interpreted as an innate moral wisdom available to everyone by virtue of their humanity (Lewis 1942) but also as something that occurs only when a person joins the community of believers (McKenna 1997). Further, if people naturally know what is good, we might expect more widespread agreement on moral laws. If people also have the capacity and motivation to act in ways that promote the good, we might expect less difficulty in acting for the good. The fact that we have the freedom to act in ways that do *not* promote the good raises the question of whether natural moral laws are truly natural in the sense that they reflect the lawful, predictable character of the universe. Even if such laws are truly natural (fully and exclusively embedded in the physical creation), we also must avoid the naturalistic fallacy, the belief that what is natural is how things

ought to be: natural = good. Haidt reminds us that “moral intuitions often bring out nonoptimal or even disastrous consequences in matters of public policy, public health and the tort system” (2001, 815).

Nevertheless, the idea of an innate natural moral law is consistent with a multidimensional view of human nature, that is, with the belief that morality is reflected not solely spiritually but as an embodied and psychologically experienced phenomenon. Granted, discussions of natural moral law do not necessarily presume that this law is embedded in human nature in a *physical* manner. Indeed, the historical tendency has been to view this knowledge and capacity as part of a nonmaterial human mind or, even more narrowly, as part of human rationality. However, a multidimensional view of human nature suggests that if natural moral law is a reality, it is also reflected in our physical being. This does not necessarily mean that moral laws are innate; they could become embodied as a result of experience (although the universality of a moral sensibility suggests that at least this aspect of morality is either innate or a result of universal elements of human experience). Further, if moral behavior is for our ultimate good, unless that ultimate good is viewed as an entirely spiritual phenomenon, it seems that some ability to recognize the lawful nature of the physical universe in which we are embedded is required. Actions produce predictable consequences that will affect our well-being and development, since we are embodied and embedded in a physical creation. It is not necessary but certainly reasonable and even likely that aspects of this recognition would be embodied in human nature through evolutionary processes. This allows us to explore the implications of evolutionary theory, neurobiology, and psychology for human morality without marginalizing its real spiritual aspect and without necessarily accepting the philosophical naturalism that frequently imbues these fields.

EMBODIED MORALITY: DISGUST IN THE BODY

We have observed that a moral sensibility and the emotion of disgust are universal human characteristics, serving spiritual and social functions. Further, there is a long theological tradition suggesting that moral capacity is innate, while “core disgust” also appears to be innate, although humans have throughout evolutionary history elaborated this response in communal contexts. Thus, we should expect disgust and moral judgment to be manifested in physiological systems generally and neurobiological systems specifically through the processes of natural selection. Is this the case? And are the neurobiological aspects of disgust and of morality related in ways that might illuminate their relationship?

Until recently, it was believed that human emotions involved a common neural system (mainly the limbic system; LeDoux 1996). However, the limbic system contains a number of subsystems and specializations,

and there is now evidence that basic emotions are in part a function of separate aspects of the limbic system as well as other distinctive brain regions (Phillips, Young, Scott, et al. 1998; Sprengelmeyer, Rausch, Eysel, and Przuntek 1998). This implies that the basic emotions may have evolved for different reasons, to address different adaptive problems. However, evolutionary psychology has not yet provided a specific and empirically supported account for the emergence of disgust (Cosmides and Tooby 2000; Nesse 1990; but see Darwin [1872] 1965).

The neurobiological study of disgust has shown that facial expressions of disgust appear to involve activation of the basal ganglia, particularly the right anterior putamen and caudate nucleus, as well as the left anterior insular cortex (Sprengelmeyer, Rausch, Eysel, and Przuntek 1998; Phillips, Young, Scott, et al. 1998; Phillips, Young, Senior, et al. 1997). These areas may also process responses to auditory disgust stimuli such as sounds of retching (Calder, Keane, Manes, et al. 2000). The *experience* of disgust may involve similar regions (Calder et al. 2000; Sprengelmeyer, Young, Calder, et al. 1996) as well as the lateral cerebellum and the occipitotemporal cortex (Lane, Reiman, Ahern, et al. 1997). These regions appear to be disgust-specific, rather than systems that more generally process perceptual abilities or basic emotions.

The specific regions involved in disgust are suggestive. The fact that the interior forebrain structures involved in disgust affect autonomic and neuroendocrine processes is consistent with the experience of disgust as literally a "gut" response. Indeed, A. R. Damasio (1994, 173) with his "somatic marker hypothesis" argues that "gut feelings" are a basic bodily response to events that plays a central role in emotional experience (as well as moral decision-making; see below). In primates, the anterior insula is the gustatory cortex, involved in the perception and hedonic evaluation of tastes and smells, in feeding and vomiting (Phillips et al. 1997). It also may be involved in language perception (Phillips et al. 1998). This is generally consistent with the observation that disgust in its unelaborated form involves a visceral response to smells and tastes that have been evaluated as unpleasant and that visual and certain acoustic stimuli can become secondary conditioned stimuli for those tastes and smells. The caudate nucleus may be involved in stimulus-response learning (Sprengelmeyer et al. 1996). Disgust, as noted earlier, is elaborated through experience to be elicited by more complex events than unpleasant tastes and smells, and behavioral psychologists have long established that emotional responses are subject to simple and powerful stimulus-response conditioning processes.

Higher-level integrative processing of all emotions involves several cortical regions. R. Adolphs, H. Damasio, D. Tranel, and A. Damasio (1996) showed that recognition of facial expressions of emotion involves the right inferior parietal cortex and the right intracalcarine cortex. However, R. Sprengelmeyer and colleagues (1998) showed that the *left* inferior frontal

cortex is involved in recognition of the facial expressions of emotions of disgust, fear, and anger. They suggest that "recognition of emotion is based on separate neural pathways; it is hypothesized that these pathways project to the inferior frontal cortex (1998, 1931). R. Lane and coauthors (1997) report that the experience and recall of emotions involve activation of the thalamus and medial prefrontal cortex, while T. Canli and colleagues (1998) further suggest that this function is lateralized to the right hemisphere.

A close examination of these neurobiological studies of emotional perception and experience shows critical differences in methodology and sampling, and, while a few consistent observations are reported, there are many inconsistencies. At present there are insufficient data to confirm preliminary findings, and our limited understanding of neurobiology renders interpretation difficult. Nevertheless, the fact that the perception and experience of disgust are manifested in dedicated neural circuits has been well established.

None of this research addresses the question of whether disgust is neurally linked with morality. To do that, we must first establish the neural systems involved in morality, then trace connections between these systems and those involved with disgust (or other moral emotions). Damasio, Tranel, and Damasio (1990) demonstrated that persons with damage to the ventromedial region of the prefrontal cortex failed to experience emotional responses to stimuli that normally trigger strong emotions, such as mutilation, death, and nudity. They also failed to show any physiological signs of the arousal produced by such emotions. However, their ability to reason remained intact. Although these patients could rely on their memory of the past to help constrain their present behavior, this disconnection between emotions and reasoning had some effect on their ability to make moral judgments considered appropriate in their cultural context, leading to a kind of "acquired sociopathy" (Damasio 1994, 178). The possible neural connection between emotions and moral reasoning has been recently addressed, interestingly, by an interdisciplinary team led by a philosopher. Researchers used fMRI to demonstrate that when responding to moral dilemmas, individuals showed activation of brain regions involved in emotional experience, including the medial frontal cortex, the posterior cingulate and anterior gyri, and *not* in frontal cortical areas known to be involved in judgment (Greene et al. 2001). This supports the psychological argument that moral evaluation is based primarily on emotion, not reason, and lends credence to the need to examine more closely the role of emotions in morality. Indeed, Damasio (1994) proposes that appropriate interactions between emotional responses and reasoning processes are essential for exercising moral judgment and making decisions. He suggests that emotions are part of evolutionarily older aspects of our nature that play a role in basic physical survival and reproductive success. In modern humans they work in conjunction with reason, an evolutionarily more

recent development, acting as crucial signals about the potential benefits or dangers of a particular action, ultimately though not always obviously or directly in relation to biological regulation and survival. Emotions attach value to particular actions, argues Damasio, and of course value is a form of moral judgment: Is this good or bad? Damasio's hypothesis is still undergoing empirical analysis, but it provides a plausible and elegant account of the role of emotions in decision making.

MORALITY AND DISGUST IN MULTIDIMENSIONAL,
INTERDISCIPLINARY PERSPECTIVE

Intriguing links emerge between these psychosocial, theological, and neurobiological perspectives on disgust and morality, some of which I have already alluded to. The psychological argument that disgust is the guardian of human identity and spiritual purity (Haidt et al. 1997) finds echoes in the Levitical laws that focus on uncleanness and impurity and specify which foods, sex acts, body envelope violations, and other disgust triggers are not acceptable in the Israelite community (Wright 1992). The concept of an innate moral law finds some support in observations that moral sensibility and reasoning are affected by brain damage and that emotions themselves are both neurally embodied and the basis of moral judgment (Damasio 1994; Greene et al. 2001). The role of emotions in morality is also supported by psychosocial research showing that emotional responses are better predictors of moral judgments than rational processes (Haidt et al. 1993) and that disgust *emerges* when someone comes to believe that certain acts are moral violations (Rozin, Markwith, and Stoess 1997).

This brief review of the literature on disgust and morality leads me to the following, very tentative, conclusions:

1. Natural moral law suggests that human morality is a universal, innate property of human nature. Whether this moral sensibility has a divine origin, is a function of natural selection acting on random variations, or some combination of these is at present a matter of worldview. However, its universality and inherent lack of compulsion is certainly consistent with the beliefs of many religious traditions that morality has a supernatural origin.
2. Morality is fundamentally expressed and controlled through emotions, including disgust, in interaction with reasoning.
3. Because disgust responses are elaborated in community and serve to maintain cultural identity, morality is a fundamentally relational, not merely individual, characteristic of human nature. This implies that morality cannot be understood in terms of abstract, absolute, rationally derived principles but is embedded in human relationship and emotional connection.

4. If we are embodied unities (Jeeves 1997), morality will be instantiated in neural circuits in the brain. The emotional aspects of morality have already been shown to be so embodied.
5. Because disgust and its role in morality is experientially elaborated, it is predicted that the neural systems involved are dynamic and should show some plasticity over the lifespan.

EMBODIED AND EMBEDDED MORALITY: DIRECTIONS FOR THE FUTURE

Considerable theoretical and empirical work needs yet to be done before we have anything near a complete understanding of disgust and morality, let alone the relationships between other emotions and morality and ultimately a nuanced analysis of human morality in general. This essay simply reviews general ideas and connections. I highlight here a few of the problems and questions that need to be addressed.

First, as noted earlier, the concept of natural moral law, while helpful in exposing interconnections among spiritual, psychological, and neurobiological aspects of morality, has its problems. We run the risk of trivializing the roles of faith traditions and communities when we argue that human nature is inherently moral and has universal access to divine moral law. A balanced and nuanced articulation of natural moral law is needed from theologians and religious scholars engaged and familiar with the relevant data on human morality coming from other disciplines before we can appropriately relate it to other perspectives on disgust and morality.

Second, while disgust triggers seem natural to members of a particular group, and we are rarely consciously aware of how disgust helps us to maintain moral purity and cultural identity, people sometimes appeal to disgust as a touchstone against which we *ought* to judge the morality of particular things. For example, in response to an article on homosexuality (Looy 1995), I received anonymously a clipping with the following quote: "the feelings of disgust normal people feel upon hearing descriptions of such things are normally strengthened by family, religion, and educational influences, thereby preventing many people from succumbing to the temptation to commit unnatural acts" (Anon. 1987). This approach reverses the relationship between disgust and morality that has been articulated by social scientists. Instead of coming to feel disgust for those things deemed, on the basis of other criteria, morally threatening, disgust is used as the basis for determining what is immoral. Is this an appropriate use of disgust? The obvious cross-cultural diversity of disgust triggers and the fact that disgust responses must be learned strongly suggest that the answer is no. However, *if* morality is innate, and *if* that innate morality includes knowledge of divine moral "laws," *and* if disgust enables us to obey those moral laws, disgust might indeed be a signal for immorality and not solely

a response. Do our moral sensibility, our basic emotions, and our rational abilities form a kind of innate “scaffolding” that is enfolded in various ways in different contexts (Van Leeuwen 2002, 44)? How extensive, pre-scriptive, and stable is that scaffolding?

In light of these questions, we need theologians and philosophers to further explore natural moral law. They also should address some of the normative questions that arise from this research. For example, in what ways might disgust *distort* our moral sensibility? *Ought* disgust to be considered a God-given trait that ideally plays a part in the development of our morality and identity in particular historical and cultural contexts? Social scientists could contribute to this enterprise by examining the function of disgust in moral evaluations and its role in mediating individual well-being and cultural identity. Psychologists could trace the co-development of disgust with moral evaluations and reasoning. For example, how are variations in disgust triggers related to the particulars of moral codes? Are those who more easily or intensely experience disgust more likely to adhere strongly to a specific moral code? And are those who are less easily disgusted also more morally relativistic?

Further, the neurobiological links between moral evaluations, moral reasoning, and emotional, rational, and perceptual processes need much more extensive exploration, using techniques such as imaging, brain lesion studies, event-related potentials (ERPs), electroencephalography (EEG), and correlations among developmental disorders, psychopathological conditions, and morality. Tracing the neural systems involved will modify theological and social-scientific theories about disgust and morality and provide some clues regarding their roots, purpose, and embodied character. Inclusion of possible autonomic, endocrine, and immune involvement in disgust and morality would extend our understanding of embodied morality beyond the brain and might identify physiological consequences of particular patterns of moral responding. And finally, interdisciplinary explorations of human morality will need to use numerous “entry points” besides disgust if we are to obtain a more complete picture and avoid reducing or restricting morality to that which is related to the negative emotion of disgust. Awe (Keltner and Haidt 2003), elevation (Haidt 2003), and joy, among other factors, may also play roles worth examining.

Our understanding of morality is in its infancy, yet technological advances in neurobiology, combined with an increasing willingness to engage in interdisciplinary dialogue and to take religion seriously as a dimension of human nature and experience, and a growing knowledge of cultural differences, have created a climate within which a breakthrough in our understanding could soon occur. A key element, in my view, is a willingness to consider a multidimensional and unified, rather than a simple reductionistic, view of human nature (see Ashbrook 1997; Brown, Murphy, and Malony 1998). I firmly believe that such interdisciplinary dia-

logue will contribute substantively to a rich, nuanced picture of human morality that does justice to its spiritual, relational, psychological, and physiological dimensions and its experiential complexity.

NOTE

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