Chapter 8
The Paradox of Moral Disgust and Three Possible Resolutions

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The phrase "moral disgust" comes to us as a paradox. "Moral" is one of the most positively valued adjectives in the English language, while "disgust" is one of the most negative states, reminding us that high standards must at times be guarded by bad feelings. Morality refers to a realm of human experience that is tied to the highest expressions of reason, while disgust reacts to things that are "rank and gross in nature" (to use the Shakespearean phrase cited in Chapman and Anderson 2013). To be moral, one should have self-control over instinctive reactions, but is not disgust one of the most instinctive of reactions? Indeed, the phrase "moral disgust" flirts with oxymoron status, a paradoxical marriage of angel and worm.

In the spirit of the "man-bites-dog" headline, paradox can make a topic counter-intuitive, fascinating, and inspirational for research. In a recent Google Scholar search, "moral disgust," at about 5000 hits, beat "moral anger" (1960 hits), "moral shame" (1900 hits), and "moral contempt" (668 hits) in popularity, among negative emotions of condemnation. "Moral guilt" had more hits, but the phrase might refer to a state of culpability rather than to an emotion; indeed, when the word "emotion" is required, "moral guilt" goes down to 2880, while "moral disgust" plus "emotion" still comes out on top at 3440 hits. At the same time, this field of research has attracted many scholars who, to follow the metaphor along, doubt that the man really did bite the dog, or have questions about definitions—maybe the "dog" was only a hot dog? Claims that emotion is a necessary and sufficient element of moral judgment in general have been questioned, as have claims that disgust in moral contexts can be distinguished from other emotions. Apparent effects of disgust on morality have been ascribed to other factors than the emotion itself. Meanwhile, further research has brought up the possibility that moral disgust is a performative

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expression rather than a real feeling; or that it responds to more general cues than the violation of bodily taboos with which it seems to have an affinity.

We currently stand in the middle of a re-evaluation of the very concept of moral disgust. In this chapter, I review the original moral intuitionist claims; the debate over the extent of disgust's involvement in moral condemnation; and the more critical perspectives that, conceptually and empirically, seek to resolve the paradox by uncoupling disgust in part or whole from morality in part or whole. That is, it seems we can have the wholehearted emotion of disgust, but only applying to some forms of moral disapproval. Alternatively, we can apply some but not all characteristic features of disgust to most kinds of moral faults, ending up with a nominal "disgust" that may just be drawn upon for its ability to evoke shunning, social coordination, or other responses appropriate to a contagious bad idea. In summing up, I focus on the implications of different views of the flexibility of disgust for moral judgment, as one more way of resolving the paradox. That is, what disgust and moral standards do have in common is a sense that they are and should be inflexible to some degree.

Intuitionism and Maximal Views of Moral Disgust

Moral psychology theory in the twentieth century tended to be cognitive in nature, led by Kohlberg's lifelong focus on the thought process rather than the outcome of moral judgment. But the twenty-first century began with Haidt's (2001) introduction into psychology of the philosophical concept of moral intuitionism, including such writers as Hume and Adam Smith. The claims made for intuition in Haidt's article were sweeping: most moral judgments are made intuitively; dilemmas such as Kohlberg's in which competing principles inform reasoned judgment are the exception, not the rule, in everyday life; and moral reasoning exists primarily to justify intuitive judgments and convince other people of them. In Haidt's view, intuition is a rapid, unreflective, and emotionally "hot" process providing judgments without much initial access to the reasons underlying them.

Theoretical work in behavioural economics and evolutionary psychology has gone beyond intuitionism to focus on the specific characteristics of emotions. As compared to mere evaluative intuitions (i.e., good or bad feelings), emotions have a number of additional traits. They are "hot", motivating processes that, to use the insight of Scherer (1984), "'decouple' the behavioral reaction from the stimulus event" (p. 295); that is, like motivations, they allow for flexible and adaptive responding to meet a goal. They are also more specific than evaluations, and this specificity has been tied to additional adaptive differentiation within the kind of threats that can arouse a negative emotion, or the kind of opportunities that can arouse a positive one. Fear, for example, is adapted to react to obvious threats to bodily safety, with appropriate behavioural responses ranging from freezing in place to fleeing. Disgust, while it is also a negatively valenced emotion, defends against contagious pathogens that threaten the body in a different way. Thus, disgust reacts

to likely signs and contexts of those pathogens (e.g., rotten smells, dead animals), and prepares behaviours that defend against those (e.g., avoidance, wrinkling the nose). Finally, specific emotions are expressive and have been studied since Darwin in terms of facial signals (Ekman 2006), whose uncontrollable, communicative nature helps coordinate social action and show cooperation with other individuals and collectives (Frank 1988).

Disgust became a star witness early on in the case for moral intuitionism, due to the inaccessibility to reasoning of specifically disgust-based moral reactions. Studies on "moral dumbfounding" (Björklund et al. 2000) have an important place in the intuitionist arguments of Haidt (2001). These studies presented several disgusting harmless violations of moral taboos (such as consensual incest) that were written to exclude any harmful consequences, and found that respondents had trouble articulating reasons why these acts were wrong (see also McHugh et al. 2017). Along the way, scholars have entertained the further notion that the specific emotion of disgust underlies nearly all instances of moral condemnation, even when harm to another person is explicit. Evidence in favour of this maximal connection between disgust and morality has come from studies showing that disgust inductions tend to sharpen moral condemnation judgments, from correlations between dispositional disgust and moral judgment, and from other examples of non-biological immoral elicitors heightening disgust, including physiological reactions (Chapman et al. 2009; Chapman and Anderson 2013).

Why would disgust play such a maximal role in morality? The most common answer (Chapman and Anderson 2013; Hutcherson and Gross 2011) is that, while physical disgust and moral disgust inputs have little in common, the output actions of disgust as contamination defence—avoiding, expelling, and abhorring the offending object—are also useful actions to take towards moral offenders. Anger is relatively more common than disgust when one's own rights are violated (Hutcherson and Gross 2011; Molho et al. 2017), and it cues directly aggressive actions that bring to attention the rights and power of the wronged individual (Molho et al. 2017; Sell et al. 2009). However, disgust is the more appropriate response when collective moral norms are violated, because its associated actions fortify the position that the offender has no place anywhere in the community. It says "I am offended for US" more loudly than it says "I am offended for MYSELF."

A related account of disgust's maximal presence in morality relies on the communication function of disgust expressions. According to Tybur et al. (2013), disgust at moral offenses is best understood as a coordination signal that—in line with a rapid and intuitive understanding of disgust, bringing us back to intuitionism—compels a unified collective response to moral offenses, avoiding the collectively undesirable situation of a feud over disagreement. Whatever the kind or context of the wrongdoing, feeling disgust helps us only insofar as it allows us to credibly express disgust. In support of this notion, Kupfer and Giner-Sorolla (2017) found that people understand that disgust, more than anger, communicates moral as opposed to self-interested motivations. The final study showed that disgust expressions can be strategically chosen to signal moral motives, even when the personal feeling described is more strongly anger. Molho et al. (2017) also conducted studies

that supported the specific role of disgust in moral situations. In their findings, disgust encouraged coordinated social action through lateral information-sharing (gossip, in not so many words) and avoidant sanctioning, as opposed to anger's more direct approach. One might also note here that lateral and avoidant actions need to be collective and total in order to be effective. Otherwise, they just partition the group into two hostile factions that support and oppose the behaviour, which thereby becomes merely controversial rather than actively taboo.

It is worth bringing up two more relatively recent explanations for why disgust might be applied to a wide variety of moral wrongs. These are less focused on the utility of the outputs of disgust (i.e., avoidant action, coordinated expression) and more focused on the utility of cognitive aspects of disgust. To be specific, they are: disgust's object focus, useful for tracking moral character; and the contagious and dose-insensitive nature of disgust, useful in thinking about the spreading of immoral ideas and values.

In one of many contemporary appraisal accounts of emotion, Ortony et al. (1990) characterise disgust, like love, as an emotion that primarily responds to the nature of objects, rather than to the tenor of a situation or to the evaluation of the self. Later observations (Haidt 2003) raise the possibility that in the moral sphere, disgust functions to appraise the "object" of a person's moral character, rather than the "situation" of a moral wrong. Vignette experiments directly testing this conjecture found support for it (Giner-Sorolla and Chapman 2017). When a person's desire to commit wrong and the harmful outcome of their action were manipulated independently, desire influenced levels of disgust and degree of harm influenced levels of anger. The effect of desire on disgust was mediated by judgments of the actor's bad character. Parallel findings emerge from studies of judgments of immoral actions embedded in media, fiction, or the imagination (Rolfe and Giner-Sorolla 2020; Sabo and Giner-Sorolla 2017). Without literal harm to arouse anger, disgust apparently prevails when any kind of immoral action is referred to in, for example, song lyrics or a video game. Such immoral depictions, even though harmless, reveals the desires and tolerances of creators and consumers, which signal laxity of moral character.

An interesting but under-examined possibility proposes that disgust is morally relevant because beliefs that challenge moral norms bear functional similarity to the viruses, bacteria, and parasites disgust evolved to control. That is, ideas can start small and multiply, like a viral contagion or the spread of genetic traits, as referenced in Dawkins' "meme" metaphor (e.g., Dawkins 1993). If immoral acts are to be controlled, they must be categorically rejected no matter how small or symbolic the "dose," and without much concern for the risk of false-positive reactions. Indirect evidence comes from recent studies (Rottman and Young 2019) that used moral violation types associated in other research with disgust and anger, and found that "purity" (disgust-related) violations, such as incest and animal-human genetic engineering, were judged less in accordance with their magnitude than "harm" (anger-related) violations, such as animal and human cruelty.

Relatedly, some recent findings from our own lab indicate that symbolic moral contamination from association with extremist symbols (cf. Rozin et al. 1986) is not likely to occur through literal contact, but rather through concerns about one's own

reputation (Kupfer and Giner-Sorolla 2021). The current battles about what ideas should be permissible in the academy, media, and workplace hinge on the rejection not only of problematic ideas but also of people who express them and of others who associate with them. The so-called "cancel culture" is proof on a large scale (if not yet from the lab) that modelling reactions on contagion and association can have weighty functions in regulating the moral nature of a society.

Paradox Resolution 1: All of Morality, Not All of Disgust

Whether moral disgust is explained in terms of action, communication, character evaluation, or social contagion management, each of these explanations applies disgust to a maximal model of morality, covering several different moral domains and types of wrongs. In doing so, they resolve the paradox between high-minded morality and lowly disgust by claiming the exaptation of a limited set of disgust-related responses or appraisals to cover the moral sphere. We can speculate that all four ideas just covered are simultaneously true, and imagine a schematic narrative: "people of bad character/will spread bad ideas, no matter how many there are/and we exclude them from our society/by letting everyone know we think they are disgusting."

Up to a certain point, this narrative resembles a skeleton of the biological disgust emotion: "things that are basically gross/will spread bad stuff, no matter how many there are/and we exclude them from our life/by letting everyone know we think they are disgusting." Yet it is not at all clear whether or not moral disgust possesses all four of these features, or overlapping completely with the disgust felt towards pathogen inducers. Just one of these features seems sufficient to produce higher endorsement of disgust in most of the self-report paradigms used in research thus far. Also, experiments testing disgust reactions to immoral actions that do not involve bodily or pathogen cues tend to show that morally elicited disgust in its broadest sense lacks some features that "core" pathogen disgust has, such as involvement of the gastric and taste system (Herz 2011), parasympathetic rather than sympathetic activation (Ottaviani et al. 2013), or rapid time course (Simpson et al. 2006). If people say they are "disgusted" at a wide range of moral transgressions, then it is possible to keep that as a concept of moral disgust, but only by treating as unnecessary some parts of the core emotion of disgust. Excluding some hallmarks of disgust to allow all parts of morality to be covered is, then, one way to resolve the paradox of moral disgust.

Paradox Resolution 2: All of Disgust, Not All of Morality

A different resolution of the moral disgust paradox keeps the full emotion of disgust, but limits its influence to certain kinds of moral situations. This solution is made possible by theories of morality that propose multiple domains of wrongs with

different defining features and characteristic emotions, initially the three-domain model (Shweder et al. 1997) later extended into the Moral Foundations model with five or more moral domains (Graham et al. 2009). Some earlier writers on morality proposed it to be universally concerned with regulating harm to others (Turiel 1977), an idea more recently defended in views that harm is a central and necessary concept to morality (e.g., Schein and Gray 2018). But, theories that have proposed multiple moral domains explicitly include moral concerns that do not involve harm or victims. Such concerns include universal taboos, such as those against incest, as well as cultural norms that regulate consensual sexuality in other ways, and miscellaneous observances that are given moral weight, such as avoiding certain foods or modifying the body in certain ways. Shows of allegiance or communal solidarity, such as respect for national symbols or observing social norms of dress, also are phenomena explained as separate domains of morality.

In particular, a certain kind of moral violation seems to be intuitively disgusting: the ones labelled "divinity" by Shweder et al. (1997) and "purity" by Graham et al. (2009) whose most salient examples are violations of sexual and food taboos. Although these violations were initially presumed to be seen as wrong because they transgressed "sacred" values which religion and culture often seek to regulate, later research has shown that this is not the whole story. For example, symbolic desecrations of sacred religious objects, provided they do not involve materials that are pathogenic and disgusting in themselves, evoke more anger than disgust (Kollareth and Russell 2019; Royzman et al. 2014). Other studies have found that, religious believers who consider "heretical" thoughts produce self-reports of disgust that predict moral judgment more strongly than anger, and feelings of contamination, but no characteristic disgust facial expressions (Ritter et al. 2016).

The role of actual "divine" or "purity" concepts in sacred acts not involving the body or infection is still unclear from this small literature. Perhaps the differences are due to desecration being seen as an external act of aggression against one's religion, whereas impure thoughts conform more to a disease model, being located within one's own mind and liable to spread if not checked. In a previous review of the literature, Russell and Giner-Sorolla (2013) were not satisfied with these sacredness-based terms to characterise violations such as incest, and instead presented evidence for a "bodily-moral" view of moral transgressions that primarily elicit disgust. These are transgressions against norms that regulate how the body is used, whether sexually; in eating; or in other ways, such as altering the body for decoration. When disgust is properly separated from anger, the review found, bodily-moral transgressions are more likely to arouse disgust, while socio-moral transgressions such as harming someone else or cheating are more likely to arouse anger.

Reviewing research on this topic can be frustrating at times because of the lack of a standard experimental protocol that takes care to separate truly moral anger from truly moral disgust. The slipperiness of the definition of "purity" or "divinity" concepts is a case in point, starting with early research on the divinity-disgust link in which not all stimuli used to represent divinity violations had a moral component (Rozin et al. 1999). Even more recent attempts to create normed material for moral research have the same potential problem. Clifford et al. (2015), for example,

presented vignettes for which the "sanctity" (purity) category was normed on judgments of how "degrading or disgusting" it is, but the categories were not tested on how immoral the violation is, and possibly non-moral hygiene violations such as "using someone else's toothbrush" were included.

There are other frequent failings of research to clearly categorise moral acts and emotions, some of which we have identified in reviews of the literature (Giner-Sorolla et al. 2018; Russell and Giner-Sorolla 2013). Some studies compare disgust to low-arousal emotions like sadness but not to anger, so that residual anger could influence reactions attributed to disgust. Others treat offenses to the self as moral issues, when the involvement of self-interest makes this more ambiguous and third-party judgments would be a clearer test of morality (e.g., Skarlicki et al. 2013). Still other studies treat harmful actions involving pathogens, like putting insects in someone's food, as examples of "purity" violations, when these are wrong because they hurt other people, not wrong because they are categorically forbidden as, for example, consensual incest is (e.g., Kupfer et al. 2020). Eating bugs yourself is gross, but it is not a moral violation of the same kind as making someone else eat bugs (for more on eating bugs see Powell, Chap. 15, this volume).

Among studies that do clearly define moral violations and emotions, some findings of bodily-moral disgust in response to harm or unfairness have been found (e.g., Cannon et al. 2011, in which unfair actions also elicited facial signals of disgust), and these might be explicable by the previously mentioned role of moral character in disgust. However, there are also a number of findings that visceral or physiological signs of disgust are especially prone to follow bodily-moral violations. Royzman et al. (2008) found that oral inhibition measures were linked to negative moral judgments of sibling incest, as compared to more normal sexual activity. Another measure of oral sensitivity, the PROP test to detect "supertaster" status, showed correlations with pathogen and sexual disgust scale items, but not with disgust towards non-sexual sociomoral transgressions (Herz 2011). Also, a recent set of studies using the antiemetic properties of ginger to quell disgust-related nausea found that the treatment reduced the severity of moral judgments, but only for bodily-moral violations (Tracy et al. 2019).

In addition, we should keep in mind that any kind of moral transgressions bring with them a fair amount of anger, further distinguishing them from pathogen disgust violations that have no moral component (Russell and Giner-Sorolla 2013). Studies comparing moral transgressions to pathogen transgressions have found differences in keeping with this observation. Across both quantitative and qualitative measures, there is more anger accompanying disgust at moral transgressions, with a slower and longer-duration response pattern (Abitan and Krauth-Gruber 2015; Simpson et al. 2006; Rubenking and Lang 2014). Even bodily-moral transgressions (incest) show a physiological signature in which sympathetic arousal predominates, as opposed to mere pathogen or "visceral" disgust, in which parasympathetic systems are more active (Ottaviani et al. 2013). When considering the same kind of moral transgressions, feelings of disgust related to a lower heart rate (typical of parasympathetic activation), and feelings of anger to a higher heart rate (typical of sympathetic activation; Konishi et al. 2020). Research on facial expressions, too, has found

differences between a slack-lipped "sickened" face that is judged more appropriate for physically disgusting situations, and the classic wrinkled-nose "disgust" face that has structural similarities to anger expressions and is judged more appropriate for morally objectionable situations (Yoder et al. 2016).

One point of disagreement about linking disgust to a special form of morality has involved the role of harm. The kind of moral violations that most clearly elicit more disgust than anger can be, and initially were, described as "harm-free" because they often involve individuals following their own bliss into incest, necro-bestiality (with the infamous chicken carcass of Haidt et al. 1993), or ethically sourced cannibalism via cloning. Even in the newer, character-based takes on moral disgust, the kind of vignettes that bring out more disgust than anger have involved characters who are thinking of doing some kind of nefarious deed but do not try to carry it out, or try without success (Giner-Sorolla and Chapman 2017). However, the extension of morality to acts that do not directly harm individuals has been challenged by theory and findings that emphasise the centrality of harm to negative moral judgment (e.g., Schein et al. 2016). The most recent version of this theory allows for the moralisation of apparently "harmless" acts, but maintains that such acts are subjectively identified with harm to communal or spiritual goods (Schein and Gray 2018).

In the process of moralisation, an issue that was previously seen as a personal choice or pragmatic matter becomes a moral mandate. There is reason to believe that adopting harm into the narrative is key to the moralisation process (Rozin 1999). For example, moralisation of smoking over the twentieth century intensified with evidence that it was harmful to the self, and later with further evidence about the harm to others of second-hand smoke. In moralisation, concepts of harm can become generalised and disconnected from the specific issue of harm reduction to individuals, as research shows that moral concerns have become associated more with disgust towards smoking than with concerns about health (e.g., Alderman et al. 2010; Helweg-Larsen 2014; Rozin and Singh 1999).

Reframing the debate over different kinds of morality into one about qualitatively different kinds of harm can help in reinterpreting the existing literature. Disgust reacts preferentially to harms that are distal and diffuse, rather than immediate and individual. The "injury" that someone causes by masturbating in an unusual way, or by sharing mere thoughts of deviant and sadistic activities, is inflicted metaphorically upon social norms about the use of the body and respect for others. As a whole, many of these norms and standards do protect against individual harm, although some are moralised conventions. Thus, someone who is willing to go against societal disgust and gleefully take part in some forbidden activity, is likely to be seen as also capable of breaking norms against interpersonal harm with a grin; an inference confirmed by research on perceptions of immoral actors (Chakroff et al. 2017). Whether the perception of harm in apparently harmless acts occurs through an effortful post-hoc process, or immediately and automatically, is a question where the literature gives conflicting and as yet unresolved answers (Gray et al. 2014; Gutierrez and Giner-Sorolla 2007). Perhaps more strongly contextualising our concept of harm—harm to whom, and when?—might help give answers.

Finally, the experimental literature showing effects of induced incidental states of disgust on moral judgment has been cited in favour of "true" disgust driving all kinds of moral judgment, not just bodily-moral. As discussed in a review of this literature (Giner-Sorolla et al. 2018), many of these studies lack tight experimental controls, and cannot rule out the influence of co-activated states, such as anger and irritation, at being exposed to disgusting smells or sights. What's more, the numerous failures to replicate incidental disgust studies (Landy and Goodwin 2015) suggest a theoretical retrenchment (Schnall et al. 2015), in which feelings of disgust need to be noticeable but not overwhelming, and need to be misattributed to moral evaluations, in order to have an effect. We argued in our review that perhaps the object-bound nature of disgust makes transfer of disgust from non-moral to moral objects a less convincing mechanism than the transfer of other moods and emotions that are more tied to situations and goals (Giner-Sorolla et al. 2018).

No Morality in Moral Disgust Examples? The Pathogen Explanation

Beyond these partial resolutions of the moral disgust paradox, there have been altogether more Gordian attempts to solve the paradox by questioning the existence of any such state as "moral disgust." One such line of argument points out that violations involving eating or sexual contact or other bodily-moral violations, by their nature, involve the body and thus expose it to infection. A general form of this argument is that the profile of moral disgust might be adapted to police the kind of violations of norms about the body that overall work to regulate infection (e.g., Inbar and Pizarro 2014). A more specific form of the argument, however, proposes that any special disgust felt at violations such as incest, faecal desecration of a church, or eating cloned human steak is a free-rider from concerns that the activity itself could spread disease (e.g., Kayyal et al. 2015; Royzman et al. 2014). This stronger form proposes that disgust relates to the infection potential of any given activity and does not intrinsically relate to the moral evaluation of the activity.

A first response to this argument is that, in some senses, controlling infection *is* a moral issue. As we are all now acutely aware in the shadow of COVID-19, what other people do with their bodies—sneezing, coughing, getting close—does bear on the welfare of the whole community. Disease-spreading acts fit a classic form of moral problem in which the careless behaviour of one person harms many more. Pathogen disgust as a form of community morality has been proposed more than studied (Curtis 2013). However, this interpretation risks reducing moral judgments of bodily acts to just another literal form of interpersonal harm: infection instead of injury. It does not capture the sense that some acts involving the body are seen as wrong in and of themselves, unnatural and disgusting.

Evidence that disgust applies primarily to bodily activities in which infection is possible has sometimes been presented as a reduction of disgust to pathogen rather

than moral concerns (e.g., Kayyal et al. 2015; Kollareth and Russell 2017). However, development of materials for such studies has not tightly controlled infection potential versus perceived immorality, relying instead on general properties such as direct physical, sexual, or ingestive contact, which also covary with the bodily-moral category. A more precise comparison would acknowledge that there are activities that do involve bodily contact, thus have similar potential for infection, but are viewed morally in different ways: for example, in English-speaking countries, eating horse meat versus beef. As well, there are bodily activities viewed in many societies with moral disgust that do not involve literal transmission of germs, a prominent example being masturbation (surely a more hygienic activity infection-wise than the alternative).

In controlled studies that hold the infection potential constant, but vary the normative versus non-normative nature of the bodily act, we and other labs have found strong differences in disgust (Giner-Sorolla et al. 2012; Gutierrez and Giner-Sorolla 2007; Royzman et al. 2008; Russell and Giner-Sorolla 2011a). Furthermore, in regression analyses, this disgust even when pitted against anger does its part to predict moral judgment, working against the idea that disgust is just a free-rider. These findings do leave open a more general form of adaptive argument: that norms about the use of the body in general include the kind of norms that protect against disease, and thus the general disgust reaction to their violation is useful, even if it sometimes catches examples that are not literally related to the transmission of disease. Such an imprecise mechanism, in my view, would be more appropriate to a cultural or biological selection process that had to operate in the absence of any explicit theory of germ transmission. Indeed, similar ideas have been advanced to explain why food taboos concern themselves with meat more than vegetable matter, even if these involve rejecting meat products that are objectively no more infectious than the culturally allowed alternative (Navarrete and Fessler 2003).

However, it would be difficult to prove, without reaching back into the mists of time, that pathogen defence is the only reason for bodily-moral acts evoking disgust. Sex and eating, as the most biologically primary acts for preservation of the group and individual, respectively, are particular targets of cultural regulation and variation. Breaking their norms threatens collective survival in a way, perhaps, that breaking other cultural conventions about dress, manners, or religion does not. A related idea under the label "existential disgust" (e.g., Goldenberg 2005) is that we carry culturally elaborated, tacit motives to distinguish ourselves from animals and to deny our own mortality. Thus, breaking rules about the body threatens the wall that culture has put up to separate us from the animals and to give us symbolic immortality through belonging.

Though the specific evidence for existential disgust is mixed (see again our review, Giner-Sorolla et al. 2018), enforcing cultural bottom-lines about what to eat and how to have sex would more generally seem to be a job for the consensus-enforcing functions of disgust explained in the previous sections, rather than for the workings of anger, which seem more attuned to legitimate disputes between individuals. Although some challenges to the definition of the purity moral domain have tried to explain it away as being based on bizarre and unusual violations (e.g., Gray

and Keeney 2015), violations of fundamental consensual norms would have to be seen as somewhat unusual by definition in order to engage the society-wide ostracism implied by disgust. Thus, covarying out the perceived weirdness of disgust-inducing acts that are seen as immoral, but not directly harmful, might throw out the conceptual baby with the bathwater.

No Disgust in Moral Disgust Examples? The Anger-Metaphor Explanation

Another challenge to research seeking to distinguish moral disgust from moral anger is the close connection between disgust and anger in moral and other social judgment domains (for a review, see again Giner-Sorolla et al. 2018). Although the two emotions have been posited as separate and "basic" negative states, a number of their features coincide. They are both high-arousal and unpleasant states; their facial expressions include similar components and are the two most commonly confused basic emotions, so that in recent empirically supported schemes of facial expression they are fused into one (Jack et al. 2016). If care in measurement and context-setting is not taken, anger and disgust responses towards social objects can become empirically indistinguishable.

In this context an early doubt about moral "disgust" was framed: given existing evidence about the use of the term "disgusted" to express anger, might verbal self-reports of disgust at moral violations simply be the deployment of a synonym for some other emotional state, such as anger (Nabi 2002)? If we accept emotion as a multi-faceted construct including language terms, the apparent relationship between disgust and moral judgment can be picked apart as only language-deep: the terminology corresponding to disgust, but everything else belonging to anger. Nabi's (2002) preferred distinctive term for disgust, "grossed-out," is akin to other measures that propose to capture more visceral forms of the emotion, tapping turned guts rather than hot heads; for example, the previously mentioned sick face, oral inhibition measures (Cusimano et al. 2018), or verbal measures incorporating physical sensations (e.g., Nummenmaa et al. 2014). In a way, to reduce moral disgust to the use of a term is simply a more extreme version of the first resolution we considered, in which a partial form of disgust can be accepted as applying to many moral situations.

As mentioned before, many studies using more visceral disgust measures, or taking other steps such as covarying out levels of expressed anger from expressed disgust, have produced a relatively narrow picture of moral disgust centred on bodily-moral violations and, at times, on expressions reflecting bad character. However, a stronger form of the mere-synonym conjecture has not been well supported. That is, verbal reports of disgust behave independently from verbal and facial reports of anger in predicting endorsement of disgusted facial expressions,

even for non-bodily moral violations (but more so for bodily-moral; Gutierrez et al. 2012).

The other evidence we have reviewed already shows that while verbal disgust towards moral violations often coexists with anger and incorporates elements of anger, it maintains other characteristics of disgust distinct from anger, such as action tendencies supporting indirect social sanctions and withdrawal, rather than anger's impulse towards direct attack. Whether to call the anger-disgust blend "anger" on one side or "disgust" the other depends, ultimately, on one's standards for categorising emotions.

A Third and Final Resolution: Shared Irrationality

In summary, the empirical evidence psychologists have gathered on disgust and morality leads to a qualification of the bald statement that the emotion of disgust, in its purest form, is essentially entangled with morality, in its total form. Rather, it seems that in order to extend the emotion of disgust to all areas of morality, we have to give up something of the visceral nature of core or pathogen disgust, and treat disgust as a feeling of social disapproval of bad characters, one that facilitates expressions of revulsion, thoughts of contamination, and actions of coordinated shunning. On the other hand, disgust as a complete and visceral emotion seems most reliably related to moral violations, such as incest, that involve violating fundamental rules of bodily conduct—not merely acts that harm others or violate their rights. However, the few findings that stand in exception to this summary, as well as the plausible hypotheses that have not yet been tested (e.g., whether visceral disgust is absent from reactions to marks of bad character), lead me to express this two-handed resolution somewhat cautiously.

A final and even more speculative possibility for the coincidence of disgust and morality rests on the inaccessibility of the core concepts of why something is disgusting, just as the core concepts of morality, past a certain level of argumentation, stand on their own and do not admit of further reasoning. To jump directly into this analogy, it is just as useful to not know why we fight for the ideals of fairness, equality, benevolence, or tradition, as to not know why we are disgusted at incest or sadism. When arguing about moral injustices, the articulated reasons, if pursued long enough, ultimately reach some inarguable, near-tautological principle such as "harming people is wrong" or "people have a right to consent to decisions that affect them." In fact, terminal moral values have been shown to share many traits in common with social truisms (Maio and Olson 1998). People find it hard to articulate reasons why they are right, and are vulnerable to counterarguments attempting to shake these seldom-defended and self-evident truths.

Likewise, disgust can be a form of truism, as shown in the kind of moral dumbfounding results that support intuitionist views of morality, and in studies building on them to examine the rationalisation of disgust. These studies show specifically that when it comes to the same moral target violating bodily norms,

disgust but not anger is difficult to spontaneously explain (Russell and Giner-Sorolla 2011b). In other words, even if participants can endorse plausible reasons for disgust when presented with them, such reasons are more difficult to produce in relation to the immoral example (see also McHugh et al. 2017). Disgust, unlike anger, also showed a small but meaningful number of tautological responses such as "it's disgusting." Other studies show that disgust is hard to reason out of, as well as into (Piazza et al. 2013). For example, mitigating circumstances that could reduce disgust felt towards moral violations, as opposed to anger, were found to be harder to imagine and less effective.

These results support a broader feature of disgust that seems intuitively right. It is hard to explain why something is really disgusting, just as it's hard to explain why something is fun or tasty. The reason for revulsion at incest is locked away in the millennia-old fog of ignorance of population genetics, just as the reason for revulsion at unfamiliar meat animals is locked away in the ignorance of germ theory. Beyond encoding strategies for long-term biological fitness, adhering unquestioningly to a symbolic practice might give benefits more generally in terms of social cohesion. While it is hard to study these processes in the lab, I can here draw on personal experience with attending highly liberal, "God-optional" religious services in which the sociological reason for every affirmation and practice was explained in full. The contrast between these and more traditional rites has shown me that understanding one's religion, as satisfying as it might be to one's self-image as a rational and tolerant person, gets in the way of really feeling and believing in a common, shared mystery.

In other words, following Frank's (1988) argument, locking a response behind a door of rational inaccessibility might be a way to ensure that it is not overridden by temporary self-interested concerns. Just as people find foods tasty or disgusting without always being able to explain why, some moral judgments might be beyond reasoning, and might thereby be strengthened. If I can explain why going to Mass is useful to me, I can abandon the practice when it is no longer useful to me as an individual. To give another example, condemning incest might conflict with benevolent desires to approve of people's happiness. These wishes are usually adaptive in a society. But, an unreasoning opposition to the act of incest works over many generations to preserve the fitness of the species. In the absence of scientific knowledge, only a seemingly irrational stance can defend the incest taboo against persuasive arguments to loosen it, "just this once."

Even when arguing about injustices that arouse more anger than disgust, the articulated reasons must ultimately reach some inarguable, near-tautological value principle such as "harming people is wrong" or "people have a right to consent to decisions that affect them" (Maio and Olson 1998). Being unable to disarm this principle, itself, also has value. Ultimately, we can see the relationship between disgust and morality not as a paradox of opposites, but as a matter of a shared faith. Revulsion at the worm, and longing for the state of the angels, are tied together by their common need to serve as the immovable limits of the moral range.

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