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How The Cognitive Penetrability Of Emotions Undermines Rational Sentimentalism

Benjamin Stanford

HOW THE COGNITIVE PENETRABILITY OF EMOTIONS UNDERMINES RATIONAL

SENTIMENTALISM

by

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Under the Direction of Andrea Scarantino

ABSTRACT

In this thesis I argue that a leading sentimentalist theory, Rational Sentimentalism, faces the

Problem of Superfluity because the evaluative properties to which certain emotions are responses

can be defined independently of examining those emotional responses. In other words, the con-

nection to value that Rational Sentimentalism aims for fails to obtain. I show that at least one

such emotion, disgust, is influenced by higher cognition to a degree incompatible with Rational

Sentimentalism avoiding the Problem of Superfluity. I conclude by suggesting ways in which

other emotions are structurally similar to disgust, and therefore face the same problem in being

incorporated into Rational Sentimentalism.

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DEDICATION

This thesis is dedicated to George Kollias, who taught me to love philosophy and take joy in excellence.

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1   INTRODUCTION

Justin D'Arms and Daniel Jacobson (2000a, 2006a, forthcoming; D'Arms 2005) have proposed a theory—Rational Sentimentalism—that claims to provide an account of how our emotions are responses to the things we value, and a vocabulary for talking about how we regulate those emotions. Their theory is promising because, if correct, it avoids a number of problems that have plagued contemporary sentimentalist theories of value—where sentimentalism is the theory that emotions can reveal value. Rational Sentimentalism applies to a certain class of emotions, which D'Arms and Jacobson call *natural emotions*. Such emotions, found in every human society, are proposed to be the building blocks of more complex emotions, and are described as having evolved for their value in providing rapid responses to crises in life (D'Arms 2005, 16).

Rational Sentimentalism achieves its aims by viewing the natural emotions as both resistant and susceptible to higher cognition. Influence by higher cognition is necessary for the theory to be rationally constrained in ways I will explore. Resistance to influence by higher cognition, on the other hand, is necessary to preserve Rational Sentimentalism from a threat I call Superfluity.

In this thesis I will argue that Rational Sentimentalism fails to escape this threat because at least one natural emotion—disgust—is highly cognitively penetrable and consequently does not show the required resistance to influence by higher cognition. In Chapter 2, I explain that Rational Sentimentalism requires natural emotions to possess a high degree of cognitive impenetrability so as to preserve the sense in which emotions are necessary to understand certain evaluative concepts. In Chapter 3, I argue that higher cognition has a leading role in determining what elicits disgust, and that disgust is cognitively regulated with relative ease. Both aspects will be

argued to be problematic for Rational Sentimentalism. In Chapter 4, I argue that we should not

consider disgust to be an isolated case, and I expand my critique of Rational Sentimentalism.

2   RATIONAL SENTIMENTALISM AND ITS ALTERNATIVES

In this chapter, I place Rational Sentimentalism in its historical and contemporary context by presenting an overview of competing value theories, focusing especially on the problems that Rational Sentimentalism aims to solve.

2.1   Objectivism and Projectivism

D'Arms and Jacobson developed Rational Sentimentalism in order to avoid weaknesses in Objectivism and Projectivism regarding value and other forms of Sensibility Theory. *Objectivism* about value claims that values exist independent of our perception of them. For instance, an objectivist would argue that beauty exists independent of our perception of it: a distant planet may well be beautiful even though no human ever sees it. A chief difficulty for the objectivist is explaining how we perceive value without positing a mysterious faculty dedicated to perceiving value. If beauty, goodness, and rightness are objective features of the world that we perceive, through what mechanisms do we perceive them? None of our five senses can directly perceive values. The objectivist could claim that our emotions *track* values in the sense that they systematically correlate with them. But D'Arms and Jacobson claim that the objectivist lacks the theoretical resources to explain how something like an emotion accurately tracks an independently existing value—and how we could know that the tracking was correct without another method of perceiving value (D'Arms and Jacobson 2006b, 187).

Projectivism claims that values are like the images a projector casts on a screen. When we look at the screen, the image appears part of the screen—not a separate thing. A person I see as beautiful is not actually beautiful; I mistakenly attribute to the person a property (beauty) that exists only in my mind. Although the world appears to contain value, value is just a characteristic we project onto the world. A projectivist would say that a distant planet cannot be beautiful be-

cause beauty is a property that we attribute to things in our experience. A chief difficulty for the projectivist is giving credence to the common idea that some judgments about value are true or false (D'Arms and Jacobson 2006b, 188-189). If value is something we project onto the world, how can "x is beautiful" be true or false? The failures of Objectivism and Projectivism progressively led to the emergence of Sensibility Theory.

2.2   Sensibility Theories

Rational Sentimentalism is a version of *Sensibility Theory*, which claims, "for something to be valuable or virtuous… is for it to elicit (or merit) certain sentiments" (D'Arms and Jacobson 2006b, 189). Emotions, then, are responses to value. Sensibility theory overcomes the difficulty Objectivism faces, in explaining how we perceive value, by saying our sentiments are responses to value. More importantly, our sentiments are appropriate responses to value. The chief difficulty of projectivism—explaining how judgments about value are true or false—is overcome by claiming that our sentiments indicate whether something we value is really as we value it. For example, we can ask whether an object said to be green is actually green (189). Sensibility theory accomplishes this by stating that our sentiments are responses to features in the world.

There are several kinds of Sensibility Theory, chiefly the metaethical theories of McDowell (1985), Gibbard (1992), Blackburn (1993), and Wiggins (2002). I will focus on Wiggins's theory because it exemplifies especially well the problems sentimentalist theories face. Although there are significant differences between sentimentalist theories, they all hold to some version of the Response Dependency Thesis. According to this thesis, "to think that X has some evaluative property Φ is to think it appropriate to feel F in response to X" (D'Arms and Jacobson 2000a, 729). For example, thinking that a bear is fearsome is thinking that fear is an appropriate

response to the bear.

Wiggins's strategy for explaining how a response is appropriate for property Φ is to say that the response is "made for" the property (Wiggins 2002, 198). He considers a response (such as anger) and examines what properties we think it responds to. The property, however, is also "made for" the response (198). Wiggins's sensibility theory is very similar to the statement of the Response Dependency Thesis: "*x* is good/right/beautiful if and only if *x* is such as to make a certain sentiment of approbation *appropriate*" (2002, 187). Certain emotions can be the appropriate response to value.

Wiggins's version of sensibility theory faces three main problems: (a) The Conflation Problem (b) The Circularity Problem (c) The Superfluity Problem. I will consider them in turn.

2.2.1   The Conflation Problem

The first problem is the failure to separate relevant and irrelevant reasons for the appropriateness of an emotion to a situation or object. This is generally termed "the conflation problem" (D'Arms and Jacobson 2000a, 732) or "the Wrong Kind of Reason objection" (Tappolet 2011, 125-127).

On Wiggins's account, we define the sentiments by discussing what the "marks" of the sentiment are, where a mark is a feature of the property the emotion responds to (Wiggins 2002, 198). One might think, for instance, that incongruity is a mark of the funny.

For Wiggins, communities are the locus where the marks of various properties are established. Some communities may latch onto a mark for shame that is not correct. For instance, a community might present a moral or prudential reason for being ashamed. Yet Wiggins's account cannot distinguish between marks that are fitting, and marks that merely speak to pruden-

tial or moral considerations. For this failure to distinguish between kinds of appropriateness, Wiggins's account still faces the Conflation Problem (D'Arms and Jacobson 2000a, 736-38).

2.2.2 The Problem of Circularity

The second problem for Wiggins's account is that it faces the Problem of Circularity. Consider the case of disgust. According to Wiggins, something is disgusting if and only if it produces appropriate disgust. Similarly, a black bear is fearsome if and only if it elicits appropriate fear. To generalize, X is Φ if and only if X elicits appropriate Φ.

His account is circular because it uses an evaluative concept to define the emotional response. What is disgusting? On his account, it turns out to be something that we are appropriately disgusted by. What are we appropriately disgusted by? Disgusting things. Wiggins defends such an account by comparing it to how we identify colors. I could define x as red "if and only if x is such as to give, under certain conditions specifiable as normal, a certain visual impression" (Wiggins 2002, 189), where the visual impression is seeing something as red. Something is red only if we perceive it as red. Although such an account of color is circular, Wiggins believes it is still informative and mirrors how we think about colors.

Wiggins similarly admits that his theory is circular (Wiggins 2002, 189). On his theory, in the case of disgust, we determine what is disgusting by examining what we are disgusted by. The property determines the response, and the response determines the property.

Wiggins adds that "the circularity is benign" because "surely a sentiment of approbation cannot be identified except by its association with the thought or feeling that x is good (or right or beautiful) and with the various considerations in which that thought is grounded, given some particular item and context" (2002, 188). Wiggins states that the most basic unit of analysis we

can arrive at is sentiments and their evaluative concepts. Circularity may be tolerated in our descriptions of color so long as the circularity is helpful in aiding our understanding. Wiggins claims that circularity is helpful, as well, for understanding how sentiments are responses to value.

If a circular analysis is the best we can come up with, then perhaps Wiggins may be correct in claiming that we must live with a circular sentimentalism. But Wiggins does not consider whether there are non-circular possibilities. If there are non-circular ways of articulating sentimentalism, then those ways should be preferred. We do not want our theories to be circular if we can avoid it.

2.2.3   The Problem of Superfluity

The third problem faced by Wiggins is the Problem of Superfluity. It emerges because sentimentalism may be unnecessary for understanding the meaning of certain evaluative terms. François Schroeter (2006) argues that a sentimentalist account of evaluative terms works only for evaluative terms defined by reference to emotional responses. For all but a handful of evaluative terms, this is not the case and, as a result, sentimentalism is superfluous: we can make sense of most values without it.

For example, consider the evaluative property "dangerous." The uncontroversial definition of danger, Schroeter claims, is that "something is dangerous just in case it is liable to cause harm" (2006, 343). When evaluating a situation to see whether it is dangerous, an analysis of the environment of situations or objects causing harm is sufficient to establish whether the situation is dangerous or not. It is not enough for Wiggins to show that a sentimentalist analysis of danger can be provided. Instead, Wiggins must show that a sentimentalist account is necessary for un-

derstanding danger.

Wiggins's account is faced with Schroeter's critique to the extent that his account claims that in order to understand the referent of our most important evaluative terms, the rational assessment of an emotion is essential. Wiggins, for example, aims to provide a sentimentalist account of some of our most important moral and aesthetic terms, such as good, right, and beautiful (185). He fails to demonstrate how the sentiments are necessary for articulating the meaning of important moral and aesthetic terms. In doing so, Wiggins's account falls prey to Schroeter's critique.

D'Arms and Jacobson extend similar arguments to other sentimentalist theories (D'Arms and Jacobson 2000a, 2000b, 2006b). If their analysis is correct, Sensibility Theories are flawed because they exhibit the Problems of Conflation, Circularity, and Superfluity. A sentimentalist theory not exhibiting these flaws has an advantage over its competitors. Rational Sentimentalism promises to do just that.

2.3   Rational Sentimentalism

2.3.1   Preliminaries

D'Arms and Jacobson recently developed a version of Sensibility Theory they call Rational Sentimentalism. It aims to show how emotions are responses to value while avoiding the Problems of Conflation, Circularity, and Superfluity.

The Conflation Problem is avoided by limiting the appropriateness conditions that count for the ascription of values to what they call *fittingness conditions*. As they put it, "[t]o judge an emotion [as] fitting is not to think it adaptive but to endorse its evaluation as correct" (D'Arms and Jacobson 2003, 145; cf. D'Arms 2005, 4). For example, fear of a bear charging my tent

while camping is fitting just in case that the evaluation embodied by the emotion—perhaps, that the bear is dangerous—is correct. Fear may not be appropriate in the prudential sense, on the other hand, because I am the sort of person that faints when afraid, and so my fear will end up being gravely maladaptive. By using an account of fittingness, D'Arms and Jacobson allow only reasons that bear on whether X is Φ to count for whether X is Φ.

But let us ask: What makes an emotion's appraisal of a situation fitting? D'Arms and Jacobson cannot simply state that what is fearful is simply what elicits fear because this would lead them right into the Circularity Problem. What Rational Sentimentalism needs is to either define the emotions without invoking the evaluative properties they respond to, or to define the evaluative properties without invoking the emotions that are responses to them.

D'Arms and Jacobson advocate the former approach. D'Arms concludes his consideration of sentimentalism and circularity by noting that circularity is avoided only "if the sentiments [one] invokes can be identified independently of the evaluative properties they putatively respond to or fit" (D'Arms 2005, 14). But emotions researchers have found it difficult to define emotions without discussing the properties they are responses to. Indeed, D'Arms and Jacobson characterize jealousy as a response to romantic defection, fear as a response to threats, sorrow as a response to losses, shame as a response to social disabilities, anger as a response to slights and outrages, and disgust as a response to contamination (D'Arms and Jacobson 2003, 139-40; 2006a, 117).

The trouble emerges in accounting for these evaluative properties. If romantic defections, threats, losses, social disabilities, slights and outrages, and contamination are defined without invoking, respectively, jealousy, fear, sorrow, shame, anger and disgust, the resulting account will be non-circular, but it will fall right into the Problem of Superfluity. For instance, if I can

define the disgusting in terms of the contaminating, and the contaminating independently of disgust, then disgust is superfluous for defining the disgusting.

The threat is significant because D'Arms and Jacobson are primarily interested in crafting an account of values that can only be defined by examining emotional responses. These kinds of values, which they call "response-dependent concepts" (D'Arms and Jacobson 2000a, 747), are the heart of their account, which aims "to preserve the idea that values are somehow grounded in the sentiments" (746). The emotions their account applies to are emotions understood as responses to response-dependent concepts. For example, they suggest that amusement is a response to the funny, where they claim we cannot understand what is funny without invoking amusement (D'Arms 2005, 2). On their view, we cannot define what is funny in terms of the response-independent property of incongruity. If it turns out that we can define what is funny without examining the emotion of amusement, then Rational Sentimentalism will fail at its most important task: showing that the sentiments are necessary to define some values.

D'Arms and Jacobson clearly recognize the threat: "If an independent account of an emotion's content can be given, then the appeal to emotional sensibility drops out of the picture. If fear could be fully explicated in terms of danger—and danger is a concept that can be independently understood—then in order to know what is fearsome…we need not consult our sense of fear. That would render a sentimentalist account of the fearsome not circular but superfluous" (D'Arms and Jacobson 2003, 128). If the emotion is not necessary to understand the meaning of an evaluative property, then it is unclear how the appropriateness of our emotional responses determines whether or not the evaluative property is instantiated.

The next two subsections explain the theoretical resources D'Arms and Jacobson rely on to try and keep emotions necessary for defining the evaluative properties (and so avoid superflui-

ty) while identifying emotions independently of the evaluative properties they are responses to (and so avoid circularity).

2.3.2   Natural Emotions Introduced

Imagine that our emotions are like computer programs that we have no control over. Natural selection has written the software code to respond to certain kinds of objects in the world. The code contains the list of objects that elicit the program. When the program perceives an elicitor, the program activates a sequence of events. Physiological changes occur, such as blood pressure rising and heart rate increasing. The person's attention is redirected to the elicitor. The program makes the person feel and behave a certain way. Even if the person does not want this cluster of responses to the elicitor, she cannot change the response. Higher cognition neither influences the elicitors of the program, nor changes the pattern of responses to a given elicitor.

If true, this view would allow Rational Sentimentalism to escape the threats of Circularity and Superfluity. Since the evaluative properties the emotion responds to are identified through natural selection, Circularity is avoided because natural selection operates upon the list of elicitors independently of the operation of the emotional response. The emotion is not fundamentally a response to the elicitors, though it responds to the elicitors the program tells it to respond to. Superfluity is also avoided because higher cognition cannot determine the definition of the evaluative properties to which the natural emotions are responses without examining the emotional response and its environment of evolutionary adaptation. The idea is that because the emotional response developed in dialogue with a specific adaptive problem, the property to which the emotion responds will be response-dependent, and therefore inexplicable without invoking the emotional response.

Rational Sentimentalism does not subscribe to such an extreme view of the emotions. It does, however, propose an analysis that is in crucial ways analogous to the one I just formulated.

D'Arms and Jacobson call the emotions they are interested in "sentiments" or "natural emotions" (D'Arms and Jacobson 2006a, 100-101; D'Arms 2005, 16). The list of natural emotions is as follows: "amusement, anger, contempt, disgust, envy, fear, guilt, jealousy, joy, pride, regret, shame, and sorrow" (D'Arms and Jacobson 2006a, 102). Natural emotions usually have an associated specific expression, are responses to appraisals, have characteristic thoughts, usually involve feelings caused by physiological change, are pan-cultural, are psychological kinds, and have evolved for their adaptive value (D'Arms and Jacobson 2006a, 101-102).

Natural emotions are all but identical to basic emotions as understood by Paul Ekman's Basic Emotion Theory (Ekman 1992, 1994; Ekman and Cordaro 2011), arguably the most influential theory in the affective sciences. Basic Emotion Theory claims that there is a class of emotions that are biologically basic, meaning that they are evolutionary adaptations. Biologically basic emotions are innate and have neural and anatomical correlates (Ortony and Turner 1990, 316). Basic emotions are affective responses that are distinguished from non-basic affective responses by exhibiting most of thirteen characteristics, which include distinctive facial signals, distinctive physiology, automatic appraisal, distinct universals in antecedent events, presence in other primates and across cultures, quick onset, brief duration, distinctive subjective experience and other biological markers (Ekman 1999).

Ekman (1999) considers the following emotions to be basic: "amusement, anger, contempt, contentment, disgust, embarrassment, excitement, fear, guilt, pride in achievement, relief, sadness/distress, satisfaction, sensory pleasure, and shame" (55). Note that not all basic emotions are natural emotions. Contentment, embarrassment, excitement, relief, satisfaction, and sensory

pleasure are not on D'Arms and Jacobson's list. In addition, not all natural emotions are basic

emotions. Envy, jealousy, joy, and regret are not on Ekman's list of basic emotions, though it's

possible that D'Arms and Jacobson's "joy" is similar to Ekman's "excitement." Some of the dif-

ference is explained by difference in terminology. For example, Ekman views the basic emotions

as families "of related emotions" (Ekman 1999, 55). He may consider regret to be in the same

emotion family as guilt. Furthermore, Ekman's list of basic emotions has evolved over the past

several decades (Ekman 1973, 1982, 1984; Ekman and Friesen 1971). His most recent list, pre-

sented in Ekman and Cordaro (2011, 365-66) is largely identical with the one I provided above,

and the differences are not worth enumerating. Given the variability in what leading researchers

consider to be basic emotions, we can conclude that the differences between Ekman's list and

D'Arms and Jacobson's list are not noteworthy. Natural emotions and basic emotions will be, for

my purposes, one and the same.

D'Arms and Jacobson, however, are interested in different features of the natural emo-

tions than Ekman is. While Ekman is interested in describing what emotions are and how one

emotion differs from another, D'Arms and Jacobson are more interested in the role that the emo-

tions play in our moral lives, how emotions interact with rationality, and how emotions are re-

sponses to value.

2.3.3   *Why Natural Emotions Must Be Informationally Encapsulated*

D'Arms and Jacobson additionally view the eliciting mechanism of natural emotions as

modular:

> It is helpful to think of [natural emotions] as modular, in Jerry Fodor's (1983)
> sense of the term. They are, to some extent, informationally encapsulated in the kinds of
> subject matter they accept as input, cognitively impenetrable in that they are often unre-
> sponsive to conclusions generated in other parts of the cognitive system, and mandatory

in that the reactions are typically not amenable to direct voluntary control. (D'Arms 2005, 16)

On D'Arms and Jacobson's view, the natural emotions are elicited only by certain "subject matters," and are in this sense informationally encapsulated. For example, even if we believed that feces are healthy to eat, the informational encapsulation of the disgust response would insure that feces still elicit disgust. A cognitively impenetrable natural emotion does not have access to all the information available to the mind. For instance, if clowns elicit my fear response, I will be afraid of clowns, even though I know they are not threatening or dangerous. Finally, mandatory responses occur when the emotional response follows inexorably from perceiving the elicitor. The fear of death by torture would be mandatory if we cannot think of death by torture without experiencing fear.

It is worth developing these remarks in light of Fodor's (1983) original account of the modularity of mind. According to it, higher cognition obtains information about the world from various modular input systems, such as the senses. Input systems are *informationally encapsulated* when "the operations of input systems are in certain respects unaffected by" the feedback of "relatively high levels of representation" (Fodor 1983, 64-65), such as "high-level expectations or beliefs" (66). More bluntly, beliefs and knowledge do not affect the output of an input system. For example, the appearance of my computer monitor moving when I push on my eyeball with my finger is not affected by my knowledge that it is my eyeball that is moving and not the computer monitor. The visual system has only a small slice of the available information in the mind available to it.

The appearance of the computer screen moving is also *cognitively impenetrable*, which occurs when "the output of the perceptual systems is largely insensitive to what the perceiver presumes or desires" (Fodor 1983, 68). In context, "presumes" is a synonym for "believes." Vis-

ual perception of my moving computer is cognitively impenetrable because the visual system is unaffected by my belief that my finger is pushing my eyeball. The visual system is furthermore unaffected by my desires. I may desire to see pink unicorns, but my visual system does not issue the corresponding visual hallucination. In summary, input systems are cognitively impenetrable when the system is insensitive to what is going on in the brain outside its system.[1]

The natural emotions must be cognitively impenetrable in order for Rational Sentimentalism to avoid Superfluity. The reason is that if we could tell what is fearsome, shameful, or disgusting just by consulting our higher cognition, we would not need to consult our sense of, respectively, fear, shame or disgust, and these emotions would end up being superfluous in the identification of the evaluative properties. In other words, if higher cognition determines what elicits the natural emotions, the natural emotions would not be needed for determining the meaning of the evaluative properties to which they are responses.

At the same time, D'Arms and Jacobson's characterize the natural emotions as only partially modular because they can be regulated by reflection. For example, if fear were thoroughly modular, "fear would be elicited only by specific visual cues, of advancing predators, for instance" (D'Arms 2005, 17). Fear does not work like this because we can fear objects and events (such as a stock market crash) that are not genetically or neurologically encoded in the natural emotion module. Furthermore, D'Arms and Jacobson aim to describe a *Rational* Sentimentalism, according to which reflection on the fittingness of an emotional response can alter an emotional response (D'Arms 2005, 14). It is important that we are able to regulate our emotions, and the sorts of considerations of fittingness made available by higher cognition are thought to play an

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[1] There are other characteristics besides these three, but they do not play a role in my argument. Modular input systems exhibit most of nine characteristics: domain specificity, mandatory operation, limited central accessibility, fast processing, information encapsulation, 'shallow' outputs, fixed neural architecture, characteristic and specific breakdown patterns, and characteristic ontogenetic pace and sequencing (Fodor 1983, 47-101).

important role in that.

Thus, the natural emotions must do double duty on D'Arms and Jacobson's theory. On the one hand, they are characterized by "ineliminability and the independence from judgment" (D'Arms 2005, 10), manifested for instance by phobias that are resistant to our judgments that things are not dangerous. On the other hand, they must have "responsiveness to reason" (10). For example, my fear of a barking dog should dissipate once I realize that the dog is securely tied to a chain and so that fear is not a fitting response to it.

Rational Sentimentalism, then, aims to strike a delicate balance between providing a non-circular explanation of what connects emotions and evaluative properties, and making emotions non-superfluous in understanding evaluative properties. As they put it, "[i]n a slogan, emotions [must be] independent from and yet responsive to reason" (D'Arms 2005, 9).

3 HOW COGNITIVELY PENETRABLE ARE THE NATURAL EMOTIONS? THE CASE OF DISGUST

My main critique of Rational Sentimentalism will be that it flounders on the Problem of Superfluity because the natural emotions are cognitively penetrable to a much larger degree than D'Arms and Jacobson recognize. Because of this, I will argue that the evaluative properties to which the natural emotions are responses can be defined without invoking the emotional responses. In other words, we can independently understand what is dangerous, disgusting, shameful, and so on without consulting our emotions. I will make my case by first focusing on disgust, and then trying to generalize my analysis. Before doing so, I will briefly explore the notion of cognitive penetrability.

3.1 More on Cognitive Penetrability

In what follows, I will not distinguish between cognitive penetrability and informational encapsulation, two phenomena that are fundamentally related and often not distinguished in the literature. For my purposes, a cognitively impenetrable and informationally encapsulated emotion is one that cannot be shaped, either in what elicits it or in how it unfolds, by higher cognition as expressed by what the emoter believes and desires. Another way to put the point is to say that a cognitively impenetrable emotion is one that cannot be *regulated* by higher cognition in terms of what elicits it or how it develops over time.[2]

Cognitive impenetrability and informational encapsulation are supposed to be enabled by neurological hardwiring. Although D'Arms and Jacobson do not take a position regarding neuro-

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[2] "Emotion regulation… refers to how we try to influence which emotions we have, when we have them, and how we experience and express these emotions" (Gross 2008). Thus, as commonly understood, influencing inputs is part of emotion regulation.

logical hardwiring, it is helpful to consider why Fodor thought it was necessary for information encapsulation. On Fodor's view of modularity, information encapsulation is secured by "fixed neural architecture" (1983, 98). This is for the reason that an input system that is closed off from other systems will likely be *physically* segregated. One way for this to occur is for the input system to have its own neurons that no other system utilizes. No other system utilizes the optic nerve, for instance, except for the visual system. By not sharing neurons with other systems, a modular system can be informationally encapsulated. Indeed, Fodor's position was strongly stated: "neural architecture… is the natural concomitant of information encapsulation" (99).

In what follows, I will show that higher cognition plays an important role in the regulation of disgust and that disgust lacks a fixed neural architecture, concluding that disgust is, to a large extent, cognitively penetrable and informationally unencapsulated.

3.2   To What Extent Is Disgust Cognitively Penetrable?

In this section I explore the extent to which the natural emotion of disgust is cognitively penetrable. I do this by presenting some findings on the influence of higher cognition on the regulation of disgust. My aim is not to demonstrate that disgust marches lockstep with the dictates of our beliefs and desires. It is widely acknowledged that the natural emotions often resist our attempts to change them. D'Arms and Jacobson call such emotions *recalcitrant* when "they continue despite one's considered judgment that they are unfitting" (D'Arms and Jacobson 2006a, 110-111). I am not denying that emotional responses, and disgust responses in particular, can sometimes be recalcitrant. Instead, I aim to accumulate evidence that disgust is often cognitively penetrable, namely that it has access to information not contained within its system.

The consensus among researchers is that disgust evolved to help safeguard the organism

from contamination and infection through the automatic rejection of poisonous and contaminat-ing objects (Harrison et al. 2010, Oaten et al. 2011, Chapman and Anderson 2012). The ultimate origin of the disgust response is theorized to be "an older food rejection system based on dis-taste" (Rozin, Haidt, and McCauley 2008, 759; cf. Toronchuk and Ellis 2013). Intense disgust is associated with a nauseous feeling, and the characteristic facial expression of disgust is the gape—"characterized by a nose wrinkle, extrusion of the tongue and expelling motion of the mouth, and wrinkled upper brow" (Kelly 2011, 16). When in the grip of disgust, we avoid or ex-pel its object. For instance, we are disgusted by maggoty meat, and refuse to eat it.

Disgust responses are distinguished based on what elicits them. *Core disgust* "pertains to the imminent threat of oral incorporation of certain elicitors" such as food, body products, and animals (Stevenson et al. 2010, 165). *Animal remainder disgust* involves an aversive offensive-ness at things reminding us that we are animals and are mortal. *Sociomoral disgust* responds to violations of purity standards, taboos, and even descriptions of criminal behavior (Rozin, Haidt, and McCauley 2008; Harrison et al. 2010; Kelly 2011; Houben and Havermans 2012). Although core, animal remainder, and sociomoral disgust respond to different objects, the responses them-selves are largely identical. There is little evidence of physiological differentiation between kinds of disgust. When I use the term, "disgust," in this paper, I refer to collectively to all sub-divisions of the term (cf. Gutierrez and Giner-Sorolla 2007, Olatunji et al. 2007, Jones and Fitness 2008, Horberg et al. 2009, Stevenson et al. 2010, Kelly 2011).

D'Arms and Jacobson identify disgust as one of the paradigm examples of the natural emotions (D'Arms and Jacobson, 2000a, 727; D'Arms and Jacobson 2000b, 68-69; D'Arms 2005a, 2; D'Arms and Jacobson 2006b, 208). Disgust is present in every culture. Many people are disgusted by handling feces, smelling rotting food, seeing a disabled person, thinking about

incest, and hearing the details of a horrible rape. Yet, disgust is also amenable to revision based on reflection driven by higher cognition. Many of us recall being disgusted by, say, broccoli when we were young, but now find it supremely delicious.

One of the main reasons to think that disgust is penetrable with respect to what elicits it is that, contrary to the claims of the dominant theory of disgust (Rozin et al. 2000; Rozin, Haidt, and McCauley 2008), when we examine the development of disgust in children we find that disgust is largely learned from one's parents through cognitively mediated processes.

For example, children enjoy playing with and even ingesting fecal matter, a clearly contaminating item. Children must be taught to be disgusted by feces by their parents. Typically, children acquire disgust at feces through being toilet trained (Stevenson et al. 2010, 174).

Children model the disgust responses of their parents, and look to their parents' reactions to disgust elicitors for cues on how to respond. By modeling their parents' behavior, children learn which objects should elicit disgust. Over time, they group these elicitors into classes of elicitors that share common features. The study found that children had similar levels of disgust as their parents regarding animal remainder and sociomoral elicitors of disgust (Stevenson et al. 2010, 175). If a parent did not show significant levels of animal remainder disgust, furthermore, the child did not either (176). The authors attribute this fact to the children not being trained by the parents to find animal remainders disgusting.

The similarity in disgust response between children and parents, moreover, is not genetically linked. Studies on identical twins raised in different households show that they develop disgust responses that mirror the household in which they are raised (Stevenson et al. 2010, 177; cf. Rozin and Millman 1987). Higher cognition appears to play a role in determining which objects (e.g. objects shaped like feces) elicit disgust, by higher cognition being necessary to under-

stand the connection being made between a class of objects and a parent's response of disgust to that class of objects.

Children learn to associate an object with disgust by modeling their parents' disgust responses. In the study by Stevenson et al. (2010), when presented with a potentially disgust-eliciting object, children looked to their parents' reactions to determine what response was appropriate (175). As children we learn to allocate objects to elicitor groups by recognizing how figures of authority respond to those objects.

I have so far discussed how higher cognition affects the *acquisition* of the disgust response to elicitors. I will now discuss how higher cognition affects the *loss* of the disgust response to elicitors. Two regulation strategies to curb disgust responses to elicitors have emerged as especially common.

First, *implementation intentions* involve forming if-then plans to deal with a potential elicitor. Suppose someone is disgusted by blood, but that on reflection they do not think that blood is disgusting. So they develop a plan on what to do when encountering blood: "If I encounter blood, I will immediately walk away, and remain calm and relaxed." In a recent study, participants who used implementation intentions in response to disgust were successful in reducing their disgust response to a disgust elicitor (blood) compared to a control group (Gallo et al. 2009, 15-16; cf. Gollwitzer and Sheeran 2006).

A second strategy is *cognitive reappraisal*, which involves the subject changing her thinking about the disgust-inducing stimulus by reassessing the meaning of the stimulus. For instance, a person regulating a disgust response through cognitive reappraisal might think to herself that the spider is not disgusting; it will not cause disease or contaminate her. The point of the strategy is to introduce thoughts and beliefs about the disgust elicitor that will prevent the disgust

response from occurring in the future. Studies show that cognitive reappraisal is a very effective regulation technique, especially when it is practiced early in the emotion response (Heilman et al. 2010, 258; cf. Williams et al. 2009; Corey 2013). It is so commonly used that we probably underestimate the extent to which it is used, because we tend to notice our recalcitrant disgust responses and not the responses that respond to cognitive reappraisal.

3.3   Is Disgust Hardwired?

I mentioned earlier that, on Fodor's view of modularity, cognitive impenetrability and informational encapsulation are generally paired with neurological hardwiring. A relevant question to assess the degree of cognitive penetrability of disgust is whether there are dedicated neural circuits for disgust. If disgust has dedicated neural circuits, we could identify brain regions that are activated in every disgust response, and brain regions that are activated *only* in disgust responses. Disgust, however, has no such regions.

Although many brain regions are activated during disgust, none are involved in every disgust response. The following brain regions were observed to be activated during disgust responses: bilateral anterior insula, parietal cortex, anterior cingulate cortex, orbitofrontal cortex, insula, ventrolateral prefrontal cortex-temporal pole, putamen-globus pallidus, dorsal anterior cingulate, visual cortex, occipitotemporal cortex, amygdala, adjacent frontal operculum, posterior lobe of the cerebellum, anterior insula, basal ganglia, somatosensory system, motor cortex, and bilateral occipital (Schienle et al. 2006, Mataix-Cols et al. 2008, Schafer et al. 2009, Jehna et al. 2011, Baumann and Mattingley 2012, Chapman and Anderson 2012, Tettamanti et al. 2012, Ruiz et al. 2013). Every brain region listed above also processes non-disgust related brain activity.

Consider the insula, which has often been pointed out as the epicenter of the disgust response (Mataix-Cols et al. 2008). The insula is also activated in arousal processing, several other basic emotions, social perception, mental imagery, gustatory, olfactory, auditory, somatosensory, addiction, and language (Schafer et al. 2009, Chapman and Anderson 2012, Tettamanti et al. 2012, Jehna et al. 2011, Ibañez et al. 2010).

The insula, furthermore, does not appear to be necessary for a disgust response. Patients with lesions in the insula showed no impairment in emotion recognition and were able to perceive socially mediated emotions, including disgust (Couto et al. 2012). Another study found that disgust prompted by scenes of mutilation had no significant activation of the insula (Schienle et al. 2006). Although we cannot draw strong conclusions on the basis of two studies, the evidence suggests that an impaired or non-activated insula is consistent with an ability to experience disgust (cf. Schienle et al. 2002).

Further studies examining the relation between disgust responses and other areas of the brain are likely to find similar results. This is because very few brain regions have domain-specific functions dedicated to processing only one kind of information. The challenge for D'Arms and Jacobson is to explain how the functional integration of multiple brain areas to produce a disgust response can be interpreted as informationally encapsulated.

I conclude that, although disgust responses can be recalcitrant, higher cognition has pervasive and persistent effects on what elicits disgust. The role that learning plays in the development of disgust shows that higher cognition helps train the disgust response to identify elicitors of disgust. Furthermore, there are at least two effective means by which higher cognition can alter which objects elicit disgust: implementation intentions and cognitive reappraisal. Even though more studies regarding disgust acquisition and regulation are needed, a cursory review of

disgust research reveals that an important natural emotion, disgust, is highly cognitively penetrable.

4   THE TROUBLE WITH RATIONAL SENTIMENTALISM

In this chapter, I argue that Rational Sentimentalism does not manage to stay clear of the Problem of Superfluity. I will begin my critique from disgust, and then generalize it to other emotions.

4.1   The Problem of Disgust

On D'Arms and Jacobson's account, to say that an object is disgusting is to think a disgust response to the object is fitting. In general, "…to apply a response-dependent concept Φ to an object X (i.e. to think that X is Φ) is to think it *appropriate* (merited, rational, justified, warranted) to feel an associated sentiment F toward X" (D'Arms 2005, 3). The fittingness of emotion F is what determines the referent of concept Φ.

D'Arms and Jacobson acknowledge that disgust evolved as a response to contamination (D'Arms and Jacobson 2003, 139-40), and that in this sense disgust "presents" its object as being contaminating. But Rational Sentimentalism holds that we cannot identify the evaluative property of disgustingness in terms of mere contamination. Instead, the theory requires that the evaluative property identified is a response-dependent concept, namely one that cannot be defined without examining the appropriateness of an emotional response. D'Arms and Jacobson aim for a tight link between emotions and value, in the sense that "moral or evaluative concepts or properties depend somehow upon human sentiments" (D'Arms 2005, 1).

My examination of the disgust literature reveals that disgust responds to several evaluative properties, chiefly contaminating objects (Rozin, Haidt, and McCauley 2008; Kelly 2011). A contaminant is a substance that will cause bodily harm, such as injury or death, such as an undercooked hamburger containing salmonella. Disgust responses can be helpful in identifying con-

taminants. Certain smells or tastes associated with contamination, such as the smell of ammonia coming from bacteria colonies on chicken that has gone bad, trigger a disgust response.

Yet, however great disgust's role may be in identifying contaminated objects, that role does not entail that the fittingness of a disgust response is necessary for determining the referent of "contaminating." In the previous paragraph, I defined "contaminating" without examining the disgust response. In other words, we do not need to examine the fittingness of a disgust response to determine the meaning of "poisonous" or "contaminating." Inasmuch as disgust is a response to contamination, disgust does not connect to value in the way that D'Arms and Jacobson claim it would. Therefore, Rational Sentimentalism is superfluous for defining most of the evaluative concepts to which disgust responds.

Given the ongoing state of disgust research—the vast majority of articles on disgust were published in the past two decades—there is room for D'Arms and Jacobson to concede the point, but argue that there are kinds of disgust responses that respond to response-dependent concepts. Given that there is a lot we do not know about disgust, they could argue that even if disgust primarily responds to response-independent properties like contamination it is possible that there are other evaluative properties that disgust responds to that are response-dependent.

The previous chapter laid the groundwork for disputing such a move. Disgust is a building block in the acquisition of the conception of contamination, but disgust does not determine what contamination is. We are entrained from a young age to associate disgust with contaminating objects, among others. It is not through examination of the disgust response, however, that we come to know that contaminating pathogens can destroy our bodily tissues and even cause death. Instead, such knowledge comes through science, by examining our cells, how our immune systems work, and how pathogens interact with our cells and immune systems. It is biology that

determines whether an object is contaminating, not the fittingness of a disgust response.

This is true not only in the sense that disgust does not determine whether something is contaminating, but also in the sense that disgust itself does not operate independently of higher cognition with respect to what it responds to. Higher cognition and reflection in light of biological facts determines what disgust responds to. Children learn from their parents what is contaminating, and their disgust system acts accordingly. Recall that we do not become disgusted at feces until we are trained to be disgusted by them during toilet training. Higher cognition can also oppose the deliverances of disgust. For example, we find disgusting chocolate that resembles fecal matter, but do not think such chocolate is contaminating. Furthermore, the emotion regulation strategies of implementation intentions and cognitive reappraisal show that disgust itself responds to what higher cognition says is, or is not, contaminating.

The point of all this is that cognitive penetrability prevents D'Arms and Jacobson from claiming that disgust could be a response to response-dependent concepts. No matter what property D'Arms and Jacobson claim disgust is a response to, higher cognition and biological facts have a key role in developing that concept. But if higher cognition has a role in defining the concept to which disgust is a response, that concept can be defined without consulting our sense of disgust.

Furthermore, it is the fact that disgust is a response to response-*independent* properties that allows us to assess its fittingness. If the only way we could learn about what disgust responds to is by consulting our sense of disgust, how could we assess which disgust responses are fitting and which ones are not? An account of fittingness requires that the evaluative properties in question be definable independently of an emotional response. Although it is by looking at the disgust response that we determine what evaluative property it responds to, we learn that the

adaptive problems it evolved to solve are response-independent problems, requiring response-independent concepts.

To sum up, given that higher cognition has a pervasive role in determining the elicitors of disgust, and that the evaluative properties to which disgust is a response can be defined without invoking the disgust response, Rational Sentimentalism is superfluous regarding such concepts. The bottom line is that, although disgust is a response to value, it is not necessary to understand the evaluative concepts to which it responds.[3]

4.2   Does the Disgust Problem Generalize?

Why should we think that my analysis extends to other natural emotions? There are four reasons.

First, the natural emotions are structurally similar from the neural point of view. What I mean by this is that none of them is associated with neural circuits that have a one-to-one correspondence with that emotion (Lindquist et al. 2012). And since having dedicated neural circuits is a marker of informational encapculation by Fodor's lights, this neural evidence suggests that other natural emotions also manifest the sort of cognitive penetrability I have ascribed to disgust. D'Arms and Jacobson, notably, are unwilling to commit to the claim that there is dedicated neurological hardwiring for the natural emotions. While granting that the natural emotions "have an evolutionary history," to think of them as being neurologically hardwired "is a speculative empirical claim" (D'Arms 2005, 16-17).

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[3] Not all critics of Rational Sentimentalism agree. Christopher Knapp (2003), for example, while agreeing that the evaluative property to which disgust is a response can be defined independent of an examination of a disgust response, argues that "disgustingness" is a descriptive property. As such, disgust cannot anchor a normative account, such as Rational Sentimentalism. While I think such an account could be made against portions of the disgust response, disgust is not simply a response to "disgustingness"; disgust responds to a plethora of elicitors. A full treatment of disgust is beyond the scope of this work.

Second, other natural emotions appear to exhibit similar kind of cognitive penetrability as disgust did. With emotions like shame and guilt, training children to respond in association with certain behaviors is much like toilet training. The acquisition of shame and guilt largely comes through learning from one's parents, and depends on the acquisition of abstract concepts, which comes through higher cognition (Stevenson et al. 2010, 165). Each of these emotions, additionally, is highly amenable to cognitive reappraisal. Indeed, Cognitive Behavior Therapy, in which reflection is used to change behavior and make objects no longer elicit emotional and behavioral responses, is the most successful emotion and behavior regulation method (Corey 2013). Even without extending the empirical analysis of disgust to the other natural emotions, we have good reason to think that the natural emotions will be highly cognitively penetrable.

Third, D'Arms and Jacobson in effect admit to the kinds of cognitive penetrability I outlined above. For instance, D'Arms and Jacobson note that even though fear has not evolved to be triggered by possible plane crashes, we nevertheless experience fear in a plane that is running out of fuel a long ways from an airport (D'Arms 2005, 17). Higher cognition allocates plane crashes to the elicitor class of harmful.

The ability of reflection to make an object no longer elicit a natural emotion is another persistent theme in D'Arms and Jacobson's publications. They give examples of how reflection participates in emotion regulation with amusement, anger, envy, fear, and shame (D'Arms and Jacobson 2006a, 108-113, 119-20). They suggest that reflecting on the unfittingness of an emotional response will, over time, cause the object to no longer elicit the emotion. Through reflection on norms of fittingness, Rational Sentimentalism achieves its central aim that their theory be rationally constrained.

Finally, D'Arms and Jacobson define the natural emotions using evaluative properties that can clearly be defined without invoking any emotional responses. For example, they note that "we are capable of assessing risks independently of our sense of fear" (2003, 141). In order to know what is dangerous, we must assess risks. Because we can know what is dangerous without consulting fear, our sense of fear is superfluous. Similarly, we can assess social disabilities without examining what we are ashamed of. D'Arms and Jacobson suggest that "inappropriate dress at a formal occasion" might count as a social disability (2006a, 110). If that is the case, inappropriate dress can be defined by examining social conventions. Because social conventions can be defined without examining shame, shame is superfluous for understanding social disabilities. All of the evaluative properties to which the natural emotions are responses appear to be definable without invoking the natural emotions.

This point is, again, consistent with D'Arms and Jacobson's claims about the need to reflect upon our emotional responses. Evaluating the fittingness of an emotional response requires having a grasp on the evaluative property that does not rely on the emotional response in question. For all these reasons, I conclude that in its current formulation Rational Sentimentalism fails to show why a sentimentalist account of values is necessary.

5   CONCLUSION

In this paper, I have argued that Rational Sentimentalism does not succeed in avoiding the Superfluity Problem that plagues other Sensibility Theories. Although D'Arms and Jacobson provide an innovative way of thinking about sentimentalism, their theory is weakened by the evidence for the cognitive penetrability of natural emotions I have provided.

In particular, I have argued that an examination of disgust shows that disgust responds primarily to evaluative properties such as contamination that can be defined without invoking the fittingness of an emotional response. I have argued that higher cognition plays a role in determining the items to which disgust responds by determining what we think is contaminating. Furthermore, disgust lacks the neural hardwiring that Fodor considered to be a concomitant of information encapsulation.

The problem with disgust generalizes, because disgust is structurally similar to other natural emotions, which are similarly affected by parental training and regulation strategies. If so, our sense of fear, shame, guilt, amusement and so on is similarly superfluous in determining values. On the other hand, Rational Sentimentalism provides a meaningful advance over other Sensibility Theories by solving the Problems of Conflation and Circularity.

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