

STENCH AND OLFACTORY DISGUST¹

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The Janus-faced nature of stench

Stench seems inextricably linked to certain persistent smells, such as rotten eggs, stink bombs, or certain rubbish bins on very warm days. Given to us through olfactory experiences, it appears as a sensible quality of certain objects or substances that can be detected by any subject equipped with a working olfactory system. However, although stench seems at first sight to be an objective property that characterizes particular objects or substances, it can equally appear as a subjective property dependent on the psychological and behavioral responses of the perceiving subject. Certain smells indeed appear as nauseating only to certain people. Such is the case, for example, with the durian, a fruit greatly appreciated by Asian gourmets but whose smell was described by an American traveler as "pig shit, turpentine and onions garnished with a dirty gym sock." (Sterling 2000: 134) Although olfactory preferences can be anchored in culture and linked in particular to alimentary practices, they can also vary among members of the same group as well as for individuals over time.

Like Janus, therefore, the notion of stench appears to have two faces. On one side, it seems to belong to the world that surrounds us. This is the case, for example, when we say that the smell of sewers is unbearable or that curdled milk stinks. On the other side, it seems more closely linked to our psychological dispositions. The variations observed in people's preferences for certain smells suggest that the attribution of stench to certain objects or substances strongly relies on the way subjects react to certain smells.

One could object, however, that the two-faced nature of the notion of stench stems from a conflation between smells perceived, on the one hand, and the stench experienced, on the other. It could be argued, for example, that the smell of Camembert or durian is objectively given, but that the appreciation of smells relies on subjective preferences. Thus, a Frenchman would be more inclined to appreciate the odor of Camembert than to appreciate that of durian, whereas the reverse would probably hold true for an

¹ I would like to thank Markus Haller, Emma Tieffenbach, Victoria Tschumi, and the editors of this book for their comments and suggestions.

Indonesian. According to this view, an odor, such as that of camembert or durian, is an objective property accessible through olfaction, whereas stench corresponds to an essentially different aspect of the psychological life of the perceiving subject. Separating stench from smell is promising to the extent that it allows for an explanation of both the objective and subjective components of our olfactory experiences. It omits, however, to take into account that smell and stench seem inseparable from the phenomenological point of view. Could one, for example, dissociate the smell of rotting meat from its stench or imagine the smell of jasmine to be fetid?

In this article, I suggest that stench has to be understood in emotional rather than strictly perceptual terms by arguing that stench is the object of olfactory disgust. This approach will lead me to claim that there are no intrinsically unpleasant smells, but only smells associated with unpleasant emotions. To defend these theses, I will first give a brief sketch of olfactory disgust and explain the specific nature of the relation between smell and stench. This analysis will allow me to critically approach the notion of the hedonic value of smells and to propose a non-polar-opposition view of olfactory pleasantness.

Smell and olfactory disgust

Certain bad smells are sufficiently powerful to trigger a reaction of aversion in the subjects confronted with them and force them to move away from their source. Such a reaction is often accompanied by a characteristic grimace and a feeling of discomfort that can go as far as a sickening feeling of nausea. Characteristic of disgust, this avoidance behavior and bodily reaction seem to indicate that stench and disgust are tied to each other. Disgust can be directed to the smell of durian, but it can bear on the entire range of sensible qualities, such as the taste of Brussels sprouts, the consistency of beef brains, or the presence of maggots in the cupboard.

My approach to disgust here is rather circumscribed, because my goal is to shed some light on the notion of stench and not to consider the notion of disgust as a whole. I will therefore focus on the notion of olfactory disgust and examine the relation between this particular form of disgust and smells. A straightforward way to account for the particular relation between smell and stench is to analyze it in causal terms. According to this view, stench would be the object of olfactory disgust, whereas certain smells would be the cause of stench. This view could take the form, for example, of a dispositionalist theory of stench by identifying stench with a capacity of certain smells to cause nausea in certain subjects. Following this analysis, stench would depend on the disposition of a subject to feel, or not to feel, disgust for certain smells. Thus, if the smell of durian is repulsive for a Frenchman but not for an Indonesian, this is because

Indonesians are not disposed to experience disgust over the smell of durian. As for the other emotions, different psychological dispositions (temperament, character, beliefs, etc.) explain why an identical stimulus (a smell) can be correlated with different emotional responses (disgust, nostalgia, etc.) (Deonna et Teroni 2009). By placing stench on the emotional level and smell on the perceptual level, the dispositionalist model seems to offer an elegant solution to the apparent ambiguity of the notion of stench. However, this approach is not entirely satisfactory, because it doesn't properly account for the phenomenology of stench. Indeed, if smell and stench can be confused, it is not because we mistake the true causal nature of stench but because stench appears as phenomenologically inseparable from the smell with which it is associated. The fact that stench is related to certain smells and not others does not simply result from the fact that we are disposed to feel a certain emotion in the presence of certain smells, but rather from the fact that we localize stench exactly where we detect these smells. In brief, from a phenomenological point of view, smell and stench seem to form a whole that is hard to capture with a dispositionalist account of stench.

Let us take, by way of comparison, the case of pain. When I prick myself with a rose, it is plausible to assert that the thorn is the cause of the pain that I feel at the tip of my finger, because I can dissociate my pain from its cause. It is indeed possible to claim that I have two almost simultaneous experiences: a tactile experience directed to the thorn and an experience of pain directed to the tip of my finger. The pain caused by the thorn can persist even after it has been removed. In contrast, when my nose detects curdled milk at the back of my fridge, the stench and the smell constitute a whole, in the sense that it is impossible to distinguish the olfactory qualities of the curdled milk from its stench.

To sum up, separating stench from smell is promising insofar as it allows for an account of intersubjective variations in smell appreciation. It has, however, the unfortunate consequence of taking stench out of the domain of smelling, consequently betraying our phenomenological intuitions regarding the olfactory character of stench.

From molecules to emotions

Beauty is in the eye of the beholder, Oscar Wilde said. Should one say that stench is in the nose (or the brain) of the one who smells? Should one concede, for example, that there is no objective criterion justifying the attribution of stench to some smells rather than others? In order to answer these different questions and deepen our understanding of what links stench to smell, we have to return to the nature of smells and olfactory disgust.

It is important to understand that smell is a chemical sense; that is, olfactory receptor cells are stimulated by chemical molecules rather than physical stimuli. In order to be smelled, an odorant must have certain characteristics, such as volatility (the molecules in question must be able to enter into the nose!), a degree of solubility in water, weak polarity, a high-lipophilic character, and vapor pressure. These characteristics are important because they help to explain why some molecules have an odor and others do not. Sugar, for example, which is nonvolatile at ambient temperatures, does not smell, but heating will free certain volatile molecules that constitute the typical smell of caramel. However, the chemical properties of a molecule are not sufficient to explain the odors we smell, because olfaction requires a perceptual apparatus able to detect them. Contrary to its reputation, human olfaction is far from being impoverished. Recent psychophysical studies suggest that the human olfactory system is in fact capable of distinguishing one trillion smells, outperforming "the other senses in the number of physically different stimuli it can discriminate." (Bushdid et al. 2014: 1370)

Smells can drive our behavior by providing information about objects and substances, such as the ripeness of a melon or the cleanliness of a restroom, but they are also intimately linked to our emotions. The hedonic appreciation of odors (their pleasantness or unpleasantness), for example, is recognized as the most salient characteristic of our olfactory judgments (Schiffman 1974) and therefore constitutes a central concern of intercultural studies of smells. As illustrated by the famous madeleine of Proust, the evocative power of smells is also supposed to underline the strongly emotional character of olfactory memories. But what is the emotional or hedonic dimension of a smell? Does stench correspond to the negative side of the hedonic dimension of smells? In that case, what would be its positive side? To address these questions, I now turn to the nature of olfactory disgust.

According to some biologists and psychologists, disgust constitutes a primitive and visceral response aimed at staying away from and preventing the ingestion of toxic or pathogenic substances. If we follow Rozin (1990), disgust stems from the "omnivore's dilemma," that is, the search for alimentary variety, on the one hand, and the potential danger associated with ingesting new foodstuffs, on the other. Insofar as he can adapt to very different surroundings, the omnivore possesses a selective advantage in comparison to species whose diet is more restrictive. This advantage comes, however, with a major difficulty: choice. Indeed, the omnivore has to both select food that will provide essential nutrients and avoid those that might be harmful. In this regard, disgust seems to constitute an effective solution, because it allows the omnivore to avoid eating food that could be fatal to him. In a more general way, Curtis and Biran (2001) suggest that disgust constitutes a trait selected by competition between

parasites and their hosts. In the same way that human bodies have evolved to resist infectious agents, certain behavioral traits have been selected to avoid potential sources of infection. According to Curtis and Biran's evolutionary explanation, aversion to and systematic avoidance of certain substances experienced as disgusting function as an effective defense against infectious agents that are potentially lethal to the organism and the genes it shelters.

For several reasons, the analysis of disgust in terms of the avoidance of potentially noxious substances appears to be a particularly good fit for the case of olfactory disgust. First, even if there are interpersonal and cultural differences in the way people appreciate odors, there seems to be a strong intercultural convergence regarding the smells considered repulsive, such as putrefaction, bodily odors (sweat, excrement), and the smell of decomposing matter (Schall et al. 1997). Second, although foul odors are not the direct cause of the spread of diseases, there is a strong correlation between repulsive smells and the risk of the transmission of disease from their source. Third, although molecules that are perceived as foul do not share particular chemical characteristics, the analysis of stench in terms of noxiousness explains what these different chemical components have in common. Lastly, this analysis offers an original solution to the two-sided (olfactory and emotional) nature of stench, because the molecules detected by the olfactory apparatus are directly linked to the risks of contamination that the object of disgust constitutes.

Perceptual experiences are often the basis for our emotions. Thus, seeing a bear can cause fear, or hearing particular words can cause sadness. The case of olfactory disgust is no different in this sense, because it is the perceiving of certain smells that causes a certain aversion in us. What is unique to the case of stench is that stench, the object of olfactory disgust, can be *identified* with the object of the olfactory experience. The smell that is constituted by chemical molecules detected by the olfactory apparatus is directly linked to the chemical components that constitute the potential danger to the organism.² By contrast, fear can be an emotion appropriate to the sighting of a bear, but the same is not true for the visual properties themselves. Thus, the fact that the bear is brown, that it is on the right side of my visual field, and that its silhouette is set against a blue background is not directly relevant to the evaluation of its dangerousness. What is relevant, however, is that these visual properties are exemplified by a bear and not a

² According to the theory of smell presented in Mizrahi (2014), odors are properties of stuffs rather than of individuals. This theory would therefore identify the object of olfaction and the object of olfactory disgust with properties of stuffs rather than individuals like molecules or some determinate portion of stuff. This approach seems very plausible when considering certain common objects of disgust, such as bodily secretions and excretions, and certain typical qualities of stuffs, such as being slimy, viscous, festering, or sticky.

cow. If the chemical properties that constitute a smell can be identified with the chemical properties potentially toxic to the smeller, it is plausible to maintain that olfactory properties themselves exemplify the immediate object of olfactory disgust. As it happens, most of the smells that we consider pestilential are chemical components resulting from the activity of bacteria. When these molecules come into contact with the olfactory apparatus, the contact is sufficient to indicate the presence of bacteria, or toxins produced by bacteria, that are potentially pathogenic for the organism.³

Pleasant and unpleasant smells

If the analysis of stench presented here is on the right track, one could say that the unpleasant character of a smell is not perceptual but derives from the unpleasant character of the emotion (disgust) associated with the smell. I suggest that the hedonic character of a given emotion is determined by "what it is like" to experience this emotion and not by its object. For example, it is the joy or sadness felt as a result of the outcome of a tennis match, and not its score, that constitutes the pleasure or displeasure felt, respectively, by the winner and loser of the match. Following this analysis, there are no intrinsically pleasant or unpleasant smells, but only emotions endowed with a certain hedonic value. Should we say, therefore, that the unpleasant character that we attribute to certain smells is both illusory and subjective?

Certainly not. First of all, being the object of an emotion does not render stench illusory or unreal. Like danger or jollity, stench is real even if it refers to our affective life rather than a "colder" aspect of cognition. In fact, the ontological status of stench depends directly on the general theory of emotion defended. If emotions are considered to be perceptions of value (Tappolet 2016), stench could be defined as the value of olfactory disgust. If, on the other hand, emotions are identified with bodily sensations (James 1884), one would be inclined to assimilate stench to the elements that trigger such sensations. Moreover, the characterization of disgust in terms of an avoidance of substances potentially noxious to the organism helps explaining the correctness conditions of olfactory disgust. It allows us, for example, to consider as appropriate the reaction of disgust caused by putrefying matter, but as inappropriate the aversion felt by people suffering from parosmia⁴ when they perceive the scent of a rose. The danger

³ The theory of stench proposed here can be interpreted as a revival of the theory of miasma, which originated in the Middle Ages and held that diseases were caused by decaying organic matter, or miasma, contained in foul air (See Demaitre 2004) Unlike its medieval ancestor, however, this theory does not claim that foul air is the direct cause of diseases, but only that it is a reliable indication of danger. See also n. 5.

⁴ Parosmia is an olfactory disorder characterized by erroneous olfactory experiences, most often unpleasant ones, in the presence of certain scents.

of bacteriological contamination involved in putrefaction is indeed real, whereas it is inexistent as far as roses are concerned.⁵

Does this mean that interpersonal differences are always a matter of emotional error or illusion? Probably not. To begin with, the intensity and occurrence of olfactory disgust, as for all emotions, depends as much on the circumstances as on certain characteristics of the subject himself. In this way, olfactory changes that occur in pregnant women (Cameron 2007) during the first weeks of pregnancy could be derived from an evolutionary mechanism aimed at protecting the fetus from poisons. But such a protective mechanism—which is well adapted to conditions in which available food presents an acute risk of contamination and to conditions in which hygiene standards are lacking—becomes an embarrassing handicap in an environment where such risks do not exist. Interpersonal and intercultural variations can also be explained by learning processes influencing isolated individuals or human groups. Even if certain aversive reactions can be considered innate, the avoidance of toxins will not be efficacious unless it can adapt to new environments. For example, the aversion to a particular food acquired after ingesting a poisonous substance constitutes an important advantage if this acquired aversion prevents the organism from ingesting the same toxin in the future. The disgust developed in such circumstances results from an emotional conditioning that is comparable, for example, to a fear of dogs developed after having been bitten by one. Another major source of emotional conditioning is the behavior of fellow humans. To avoid a particular food, we don't need to have become ill after ingesting it. The facial expression characteristic of olfactory disgust is indeed a very effective warning to other members of a group of the nauseous smell of a substance (Wicker and al. 2003). It is quite obvious, moreover, that the alimentary and hygienic habits of a group help to reinforce or attenuate individual predispositions to the experience of olfactory disgust. Rejection or avoidance attitudes toward cheese, for example, differ according to eating habits. However, as I will show below, emotional variations such as those related to cheese are not necessarily accompanied by a disagreement regarding its stench.

Exquisite stench

Numerous studies in psychophysics classify smells on the basis of a hedonic spectrum that ranges from pleasantness to aversiveness. However, if my analysis of stench is correct, the disagreeable character attributed to certain smells derives from the

⁵ There is no strict equivalence between stinking substances and infectious substances. Numerous pestilential smells emanate from substances that present no health risk: stink bombs, cheeses, etc. It is nevertheless likely that all stinking substances share chemical properties with the substances that do present such a risk.

negative valence of an emotion—disgust—and not from some salient phenomenological property of odors experienced through olfaction. If this is the case, judgments of agreeability regarding smells are problematic, because the meaning of “pleasant” and “unpleasant” expressed in these judgments is not well established. Unlike sounds, which are phenomenologically high or low and can be ordered according to their pitch, and unlike thermal properties, which vary from cold to hot, there is no obvious way to classify odors on the basis of opposite valences. Indeed, if stench corresponds to the negative valence of a hedonic dimension of smells, what would the positive valence be? There certainly are smells that are pleasant to us, but can they be opposed to smells for which we feel an aversion?

Unlike most studies that order smells on a scale of pleasantness, I believe there is no hedonic dimension shared by all smells. If certain smells appear pleasant to us (and others unpleasant), it is not because these smells share a dimension of pleasantness (or unpleasantness) but because different smells can be the object of emotions with different hedonic values. Nauseating smells can be compared with one another. The emotion of disgust related to a particular smell can be more or less strong in the same way that there are more or less frightening situations and more or less admirable persons. Yet the opposition between stench and pleasant smells does not really make sense, because olfactory disgust does not have an opposite emotion. A smell can be pleasant because it awakens our appetite, evokes cleanliness, or even corresponds to aesthetic appreciation. But no positive olfactory emotion is strictly the opposite of olfactory disgust.

Most of the cultural divergences that characterize smells result, I believe, from the richness of olfactory emotions. The pleasure experienced by a gourmet when eating Maroilles,⁶ for example, does not indicate that he is insensitive to its stench; rather, it implies that smelling and tasting Maroilles can be a source of positive emotions for him. Moreover, if the extreme richness of the olfactory world can explain the variety of emotions associated with it, it can also explain why the appreciation of smells is not always immediate and often requires some training. Smells around us are sources of pleasure, displeasure, and sometimes a combination of both, but it is in the art of perfume that the whole panoply of our olfactory emotions is revealed. Instead of ignoring stench, perfumers track it down in its various guises and integrate it into their most subtle compositions. If so many masterpieces of this art are French, this is, according to Luca Turin, because the French, more than anybody else, have an intimate

⁶ Maroilles is a French cheese with a particularly strong odor. One of its varieties is in fact known as “soaked stink” and “Stinker from Lille.”

relation with stench. To the question, "Why are so many great perfumes French?" he answers as follows:

To understand this, one has to make a gastronomic detour. It is in the kitchen that this nation of alchemists has known, better than any other, how to exploit fermentation and putrefaction, and venerates without shame such pestilential creations as Munster. Likewise, the closest viticultural creation to perfume, a white liquor-like Bordeaux, so sunny in appearance, owes its existence to a mushroom whose name itself captures the sensual genius of the French: noble rot.

What does this have to do with perfume? Very simply that these latter would be terminally boring if only pleasant smells would enter into their make-up, and that they only become truly beautiful when repugnant ingredients are included.

It suffices to have smelt the civet, the castoreum or indole, to realize that the ways of perfume are less impenetrable for an eater of Camembert than for a drinker of yoghurt. (Turin 1994:3)

References

Bushdid and al. 2014. "Humans Can Discriminate More than 1 Trillion Olfactory Stimuli Science." *Science* 343: 1370-1372.

Cameron, Leslie E. 2007. "Measures of Human Olfactory Perception During Pregnancy," *Chemical Senses* 32: 775-782.

Curtis, Valérie and Adam Biran. 2001 "Dirt, Disgust, and Disease: Is Hygiene in Our Genes?" *Perspectives in Biology and Medicine* 44: 17-31.

Demaitre, Luke. 2004 'Air, miasma and contagion - Epidemics in antiquity and the Middle Ages', *Bulletin of the History of Medicine*, 78 (2): 466-468

Deonna, Julien et Fabrice Teroni. 2009. "Taking Affective Explanations to Heart", *Social Science Information* 48 (3): 359-377.

James, William. 1884 "What is an Emotion?" *Mind* 9: 188-205.

Mizrahi, Vivian. 2014. "Sniff, Smell and Stuff," *Philosophical Studies* 171: 233-250.

Rozin, Paul. 1990. "Development in the Food Domain," *Developmental Psychology* 26: 555-562.

Schaal and al. 1997. "Variability and invariants in early odour preferences: comparative data from children belonging to three cultures", *Chemical Senses* 22: 212.

Schiffman, Susan S. 1974. "Physicochemical Correlates of Olfactory Quality", *Science* 185: 112-117.

Sterling, Richard. 2000. *World Food: Vietnam*, Hawthorn, Victoria: Lonely Planet Publication.

Tappolet, Christine. 2016. *Emotions, Value, and Agency*, Oxford, United Kingdom: Oxford University Press.

Turin, Luca. 1994. *Parfums: le Guide*, Paris : Hermé.

Wicker and al. 2003. "Both of Us Disgusted in My Insula: The Common Neural Basis of Seeing and Feeling Disgust," *Neuron* 40 (3): 655-64.