

A Note on an Asymmetry in the Hedonic Implicatures of Olfactory and Gustatory Terms

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As Samuel Johnson paused to rest on a London park bench one hot summer's day, his profusely sweating bulk caused a young woman sitting next to him to accuse him of smelling. "No, Madam," he replied. "You smell, I stink."

1. The Language of the Senses

The ways in which languages express primary sense qualities have been investigated quite unevenly, which is due to the fact that there are great differences in how the senses are linguistically represented, which in turn reflects differences in these sense qualities themselves and their role in cognition.

We know most about the sense of Sight, with milestones like Berlin & Kay (1969) and Kay et al. (2006). Languages differ in quite systematic ways in their expression of color terms that can be related to basic mechanisms of color perception and the further neural processing of visual stimuli. We can distinguish between a pair of terms denoting intensity (*light* and *dark*), and terms denoting individual colors. There is more to sight than lightness and color, though. Such additional aspect, such as sharp or blurred transitions, have not been investigated by linguists so far.

In contrast, the encoding of the sense of Hearing is little-known territory (but see Dubois 2000), and would be a rewarding topic for a collaborative project between a phoneticist and a lexical semanticist. In English, there are a number of sound terms: *Loud* and *quiet* or *soft* denote the overall intensity, and thus correspond to *light* and *dark* in the visual domain. We can denote frequency with *high* and *low*, which in other languages may be expressed by the terms for *thin* and *thick* (cf. Shayan e.a. 2009). And there are other terms that refer to specific qualities of sound like *clear* or *muffled*. But the typical way in which sounds are expressed in English is by verbs and derived nouns like *bang*, *whistle*, *hum* or *whimper*.

The terms of Taste have been investigated starting with Myers (1904), with the result that sweet, sour, bitter, salty, *umami* (a Japanese word denoting the taste of monosodium glutamate) and perhaps fatty are frequently distinguished as basic tastes, often with connotations such as common terms for sweet and salty, or sour and bitter (cf. Majid and Levinson 2008). The sense of Smell is much more diverse, both in the number of sensations it can distinguish and in how they are expressed in languages. While European languages seem to lack genuine descriptive smell terms (cf. Plank & Plank 1995, Dubois 2000, Dubois and Rouby 2002), the Mexican language Totonak is reported to have about twenty, cf. Aschmann (1946). There are no unequivocal terms denoting intensity for Taste or Smell in English; the terms *tasty* or *tasteful* and *tasteless*, or *smelly* come with judgmental connotations, to which I will return below.

For the sense of Touch, English has terms like *rough*, *smooth*, *soft* and *hard*. Tactile qualities are often expressed by ideophones in languages that have this word category, cf. Dingemanse (2009). There is no term for denoting general intensity for the sense of Touch. Intensities are again

distinguished in terms for the sense of Temperature, as in *hot* and *cold*, with possible terms for temperatures in-between the extremes like *warm* and *tepid*. Pain can also be reported; the general intensity can be expressed by *painful*, and we customarily denote the nature of pain with a few terms, like *stabbing pain*. There are peculiarities with the expression of pain: We find specialized interjections like *ouch*, and there is a close relation to the speech act type of expressives (see Ehlich 1984, Overlach 2008 for the expression of pain in language, especially in a clinical context).

The investigation of basic sense terms is beset with problems. One fundamental problem is that it is possible to describe sensory impressions by referring to particular objects – e.g. if the taste of a red wine is called *grainy*, or the smell of a carrion flower is described as *rotten*. In many cases, we would not want to consider such expressions sense terms, but they can develop into true sense terms. For example, the color term *orange* is derived from the common term for *Citrus sinensis*. It can be difficult to decide at which stage the transition to a basic sense term is completed – e.g., what is different, linguistically, between *salty*, a basic taste term related to *salt*, and *minty*, related to *mint*? The same problem applies to certain adjectives. If we call a knife *sharp*, does this term primarily refer to the sense quality when we touch it, or is it rather a descriptive term for the property of the knife that happens to create a certain sensation when one touches it?

Another problem is that terms may be semantically restricted, like *blond* for hair (and possibly beer). Terms may encode cross-modal combinations, which is often the case with olfactory and gustatory sense impressions. Also, we find cross-modal terms like *high / low* for pitch, *hot* for taste, or *soft* for reduced loudness. It has been argued by Williams (1976) that such transfers of terms from one sense quality to another follows particular rules, making this area one of the few where regular meaning change can be observed. Viberg (1984) has investigated frequent patterns of non-distinction in the verbs denoting sensory activities; very frequently, for the senses of touch, smell and taste the same verb is used.

There is some indication that the linguistic coding of sense impressions is becoming an important research area – witness publications like Plümacher & Holz (2007) and the establishment of a research project on *Language and Perception* at the Max Planck Institute of Psycholinguistics.

2. Pleasantness, with Particular Reference to Smell and Taste

In the present article I would like to make a small and rather preliminary contribution to this developing field by pointing out a dimension of perception encoding that is not often talked about, namely the hedonic dimension related to pleasantness (and its opposite, unpleasantness).

The dimension of pleasantness is inherently part of nociception, or pain perception. Physical pain is always categorized as unpleasant. This is reflected linguistically by the fact that there are specialized expressive interjections for pain. With the senses of Sight, Hearing, or Temperature, there is no intrinsic relation to pleasantness. It is true that we can react with *Ouch!* on hearing a balloon pop close to our ears, on touching a hot cooking plate with our hand, or on putting our nose too close to an open bottle of sal ammoniac, but this is because these sensations transcend a threshold where they are classified as painful, and hence unpleasant. With the sense of Smell and Taste there seems to be an intrinsic hedonic bias that is absent with the visual, auditory, tactile or temperature senses (cf. Boisson 1997 and Dubois 2000 for the sense of smell), and on this I would like to concentrate in this article.

It has been long recognized that the primary dimension for smell words is the distinction between good and bad smells. Buck (1949), in his survey of Indo-European languages, states that “the only widespread popular distinction is that of pleasant and unpleasant smells [...] and this is linguistically more important than any similar distinction, that is, of good and bad, in the case of other senses.” Boisson (1997) gives evidence for this phenomenon in a number of non-European languages as well; he also observes that the linguistic distinctions for bad smells are generally richer than the ones for good smells. He also states that “dans toute une série de langues, un terme olfactif neutre (nom ou verbe) employé seul (sans spécification adjectivale or adverbiale) s’interprète

comme véhiculant un sens négative”, and that in language change, a neutral smell word more often develops into a word for bad smells than into a word for good smells. What has escaped notice, though, is that there appears to be the opposite tendency for general words denoting the sense of taste.

The hedonic biases are quite evident with the English terms *tasty* and *smelly*, as the pleasantness and unpleasantness connotations are part of their lexical meanings. The general terms for the olfactory and gustatory are the only terms derived from sense denotations that allow for the formation of adjectives with *-ly*. There is no **seey* or **heary*, and *touchy* has a quite different meaning. And the connotations that they convey are quite contrary, cf. the beginning of the entries of these lemmas in the Oxford English Dictionary:

- (1) a. *tasty*. Pleasing to the taste; appetizing, savoury.
- b. *smelly*. Emitting a bad smell or smells; stinking.

The bias towards pleasantness with the adjective derived from the basic term for taste, and towards unpleasantness with the basic term for smell, is quite remarkable. It is not a quirk of English; inferences about the quality of the English cuisine or the English sanitary standards would be premature. We find the same biases in other languages as well. In German, the verbs for *to smell* and *to taste* can be used intransitively, and they can trigger similar meanings as English *tasty* and *smelly*.

- (2) a. *Der Käse schmeckt.*
 ‘The cheese is tasty.’
- b. *Der Käse riecht.*
 ‘The cheese smells / is smelly.’

English has a similar interpretation of the verb *smell* – see the anecdote about Samuel Johnson at the beginning of this paper. The situation is slightly different from English *tasty* and *smelly*, as pleasantness or unpleasantness is only conveyed by way of cancelable implicature. We can easily modify the intransitive verbs *schmecken* and *riechen* by *gut* or *schlecht*:

- (3) a. *Der Käse schmeckt gut / schlecht.*
 ‘The cheese tastes good / bad.’
- c. *Der Käse riecht gut / schlecht.*
 ‘The cheese smells good / bad.’

The pleasantness implicatures can also be cancelled in other ways. For example, in exclamatives interjections like *mmh!* or *pfui!* can indicate the direction of pleasantness, and corresponding facial expressions can shift the interpretation of the following sentences in either way:

- (4) a. *Wie der Käse schmeckt!*
 ‘Oh, how the cheese is tasting!’ (good or bad, according to facial expression)
- b. *Wie der Käse riecht!*
 ‘Oh, how the cheese is smelling!’ (good or bad, according to facial expression)

The evidence for the implicatures present in (2) comes from asking German native speakers, but would have to be corroborated by a more serious questionnaire, as well as by corpus studies. Our basic observation is supported by the clear difference in the following sentences; while (a) is strange, as it presupposes that Bernd likes foods that are tasteless or even taste bad, (b) is fine.

- (5) a. # *Bernd mag den Käse nicht, weil er schmeckt.*
 ‘Bernd doesn’t like the cheese because it is tasty.’
- b. *Bernd mag den Käse nicht, weil er riecht.*
 ‘Bernd does not like the cheese because it is smelly.’

The hedonic implicature appears to be less strong with *riecht*, as the following sentences appear both fine.

- (6) a. *Bernd mag den Käse, weil er schmeckt.*
‘Bernd likes the cheese because it is tasty.’
b. *Bernd mag den Käse, weil er riecht.*
‘Bernd does not like the cheese because it has a smell.’

There is interestingly another difference between *schmecken* and *riechen*: While *schmecken* allows for the realization of the experiencer by a dative, this is not possible for *riechen*.¹

- (7) a. *Der Käse schmeckt dem Bernd.*
‘The cheese is tasty to Bernd.’
b. **Der Käse riecht dem Bernd.*

I do not know, at this point, how this asymmetry in the realization of basic terms for smell and taste generalizes to other languages. It is certainly worth a research project. Here, I would like to speculate about possible reasons for the different behavior of *smell* and *taste*.

3. Explaining the Difference between Smell and Taste

One explanation can be derived from Horn (1984), who discusses the interpretation of *smell*, which comes as a surprise for the theory of autohyponyms developed in his paper. The phenomenon of autohyponyms can be illustrated with such terms like *rectangle* and *square*, where the second is a hyponym of the latter. In this pragmatic configuration, the less inclusive term *rectangle* tends to be restricted in its use to those entities for which the more inclusive term cannot be applied. In our case, *rectangle* will typically be used for rectangles that are not squares. We should expect a similar situation for the terms *smell* and *stink*: The more general term *smell* should be restricted to the complement of those odors that do not fall under *stink*, hence to neutral or good smells. This is not what we find; we rather observe the opposite, a pragmatic strengthening of *smell* to those odors that do not smell so good. Otherwise, Samuel Johnson’s remark would not only be not witty; there would have been no grounds for it to begin with, as the lady would have expressed a compliment.

Horn explains this as a politeness effect: Bad smells are often associated with taboos, hence speakers try to avoid talking about them in many situations. They avoid the word *stink* that directly refers to bad smells, and use the originally neutral word *smell* for this case. When this happens regularly, addressees will learn to interpret *smell* in an way that reflects this pragmatic mechanism, as referring to an odor that indeed means bad smells. This implicature has become part of the lexical meaning with *smelly*. If we follow Boisson (1997), this is not a quirk of English, but a widespread phenomenon. Boisson also notices that smell terms specific for excrement seem not to exist, which gives further evidence for the role of taboos and euphemisms in this domain.

This explanation sounds plausible, as this is a well-known mechanism for the devaluation of terms via their euphemistic use (cf. Keller 1994). But the explanation does not work quite as easily for German, which has a term for pleasant smell (*duften*, in addition to *riechen* and *stinken*), yet *riechen* also triggers an implicature of unpleasantness, and *duften* does not broaden its range of application to a general term for olfactory sensation. Horn’s explanation is also difficult to apply to the semantic strengthening of *schmecken* towards the meaning of ‘tasty’. I am not aware of simple expressions with the meaning ‘taste good’ or ‘taste bad’ in English. German has a rather rare verb *munden* for ‘taste good’, but no simple word for ‘taste bad’, and so one should prima facie assume

¹ Realization of the experiencer by dative expressions is not possible for other perception verbs. For pain, interestingly, the experiencer is expressed by the accusative, indicating a greater affectedness: *Der Zahn schmerzt den Bernd.* ‘The tooth is hurting Bernd.’

that the general term *schmecken* would have a bias towards ‘taste bad’, contrary to the facts. It is also not possible to invoke euphemisms in this case, as saying that something tastes good is certainly not socially penalized, which would be a precondition for generating a euphemistic strengthening of a neutral term *taste* to a meaning ‘taste good’.

The second explanation that I would like to offer is based on the assumption that the things that we taste and the things that we smell differ systematically in how pleasant and unpleasant they are. The reason is that we have generally more control over what we put into our mouth than what enters our nose. If one guiding principle of our behavior is the maximization of pleasure, and if there are roughly equally many pleasant and unpleasant smells and tastes available, then we should draw more pleasure out of the sense that we can control, than out of the sense that we cannot control as easily. Consequently, what we taste will be more likely pleasant than what we smell. This is the condition that is known to lead to so-called I-implicatures, the enrichment of meanings to the prototypical case (cf. Levinson 2000). There are many examples that are structurally similar. For example, *nurse* is typically understood as ‘female nurse’ because most nurses are female, but this is not part of the lexical meaning – there is no contradiction in *male nurse* (there is even a *Male Nurse Magazine*, see <http://www.malenursemagazine.com/>). For another example, *He opened the door* is understood to mean that he opened the door in a regular way, but not by smashing the door with an axe, even though we can say *He opened the door with an axe*. I-Implicatures are rooted in the conversational maxim called the I-Principle, which states that speakers should say as little as possible to achieve understanding. The corresponding rule for recipients is to add information that is uncontroversial, conventional and stereotypical.

There is a game-theoretic motivation behind I-Implicatures that can be formulated within bidirectional optimality theory (Blutner 2000, Jäger 2002) in a version that factors in the theory of strategic communication (Parikh, 2000). The basic idea is as follows: If we have two expressions α , α' that can express the same meaning m , then the shorter expression is preferred. And if an expression α has two interpretations m , m' then the more likely interpretation is preferred. Let us assume, following the discussion of the different control we exert about taste and smell, that it is more likely that a taste is good than that a taste is bad, and that it is less likely that a smell is good than that a smell is bad. Then we have the following pairs of expressions and interpretations, where “>” expresses preference:

- (8) $\langle \textit{schmeckt}$, ‘tastes good’ $\rangle > \langle \textit{schmeckt}$, ‘tastes bad’ \rangle ,
as ‘tastes good’ is more likely.
 $\langle \textit{schmeckt}$, ‘tastes good’ $\rangle > \langle \textit{schmeckt gut}$ ‘tastes good’ \rangle
as *schmeckt* is less complex.
 $\langle \textit{schmeckt}$, ‘tastes bad’ $\rangle > \langle \textit{schmeckt schlecht}$ ‘tastes bad’ \rangle
as *schmeckt* is less complex.

The overall winner is $\langle \textit{schmeckt}$, ‘tastes good’ \rangle : the less complex expression is paired with the most likely interpretation. This blocks the pair $\langle \textit{schmeckt gut}$, ‘tastes good’ \rangle because it uses a more complex expression. But it does not block the pair $\langle \textit{schmeckt schlecht}$, ‘tastes bad’ \rangle because in this case we have both a different expression and a different interpretation.

With smelling we have just the opposite configuration if we assume that things that we smell more likely smell bad than good:

- (9) $\langle \textit{riecht}$, ‘smells bad’ $\rangle > \langle \textit{riecht}$, ‘smells good’ \rangle ,
as ‘smells bad’ is more likely.
 $\langle \textit{riecht}$, ‘smells bad’ $\rangle > \langle \textit{riecht schlecht}$ ‘smells bad’ \rangle
as *riecht* is less complex.
 $\langle \textit{riecht}$, ‘smells good’ $\rangle > \langle \textit{riecht gut}$ ‘smells good’ \rangle
as *riecht* is less complex

Here, the pair ⟨*riecht*, ‘smells bad’⟩ comes out as the winner, blocking the pair ⟨*riecht*, ‘smells good’⟩, but the pair ⟨*riecht gut*, ‘smells good’⟩ is not blocked, as it differs in both in form and interpretation from the victorious pair.

In this way we can derive the different pragmatic biases of *schmecken* ‘taste’ and *riechen* ‘smell’ from general pragmatic rules, together with an apparently well-motivated difference in the likely incidence of good vs. bad smells and tastes.

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