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What kinds of kind are the senses?

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ABSTRACT

In Western common sense, one speaks of there being five human senses, a claim apparently challenged by the biological and psychological sciences. Part of this challenge comes in the form of claiming the existence of additional senses (proprioception, pain, a human pheromone sense). Part of the challenge comes from positing multiple senses where common sense only speaks of one, such as with the fractionation of “touch” into pressure and temperature senses. One conceptual difficulty in thinking about the number and division of senses is that it's not clear whether the different senses constitute natural kinds and, if not, what kind of kind they are. Should we favor antirealism with respect to the senses, akin to the arguments of some concerning the nature of species or race? I will argue that this first problem is compounded by another: that we ought to be pluralists with respect to the senses—what is meant by the term “sense” varies from context to context, varying even between scientific contexts.

I. Introduction

In a recent paper, “The senses as psychological kinds,” Matthew Nudds (2011) observes and asks, “We see, hear, touch, smell, and taste things. In distinguishing determinate ways of perceiving things, what are we distinguishing between? What, in other words, is a sense modality” (311)? He goes on to note that there are many differences to be found between the senses, but asks, “...which, if any, of these differences are those that *really matter?*” (311, my emphasis). This

is all just a way of asking a question about the metaphysical nature of the senses.

At first glance, it might seem that the difference between the senses would be a paradigm case of a difference in *kind*. On many different commonsense criteria, seeing and hearing, say, are fundamentally different: They are carried out by different organs (eyes and ears, respectively). They bring us information about very different aspects of the world (colors and pitches). They involve the transduction of different kinds of energy (electromagnetic and mechanical). Further, the experiences of one are not easily confused with those of the other. The differences here would seem to be *brute*; a starting point for further analysis, not something open for much analysis itself. Apparently, seeing and hearing are *just different*.

In exploring these questions, Nudds considers the possibility that the senses are natural kinds—more precisely: “psychological kinds”—and are differentiated in virtue of the different perceptual (psychological) mechanisms that operate in the cases of the differing senses. However, although he sees such an account as having merit, he is not ultimately willing to bet on it.¹ Instead, he proposes that,

...we could accept that in distinguishing different perceptions we are distinguishing them on the basis of how they were produced but give up on the idea that we can explain or give an account of the different ways that perceptions are produced that is independent of our practice of making the distinction.

¹ He’s bothered that embracing such an account very likely will lead to the conclusion that the claim of common sense that humans have five (and exactly five) senses will be refuted. He finds this anathema and would prefer to avoid embracing such an eliminative materialist line of reasoning. As they say, one person’s *modus ponens* is another person’s *modus tolens*.

According to this approach, all visual perceptions are produced in the same way, and different ways of perceiving are individuated relative to a social practice of explaining and understanding behavior. On this view a sense modality is what might be called a *social* kind rather than a natural kind. Such an account may provide the best account of what a sense modality, as we commonly understand it, actually is. (338, emphasis in original)

Nudds is exploring an interesting issue: are the senses natural kinds? Social kinds? My own reaction is that there are deeper issues here of which he is only scratching the surface. Nudds' paper is one of the only ones I am familiar with that grapples with the question of what it is that we are presupposing in the first place when we talk of different senses.² But even Nudds' analysis is pretty slim on what the options are. For example, the paragraph I quote above (the final paragraph of the paper) is pretty much all he says on what a "social kind" is supposed to be. Similarly, although the notion of "natural kinds" is central to the paper, Nudds has almost nothing to say about what he takes that concept to mean; it is left largely unpacked. He draws no connection to the literature in philosophy of science over the metaphysical nature of natural vs. other kinds.

Further, we shouldn't take it for granted that the senses are, in fact, properly thought of as different kinds, whether paradigmatically or not. This oversight is important because, as I will show in this paper, it is far from clear what kind of kind the senses are, if they are any "kind" at all. Further, I will argue that what kind the senses are, in fact, varies from context to context. Treating "the senses" uniformly as kinds of a particular kind confuses rather than clarifies the situation.

² Nudds' previous paper in 2004 is another.

II. Why does the question matter?

Why does the question concerning the kind-hood of senses matter? So what? First, the questions here are centrally important to the metaphysics of mind. Ought we be realists with respect to the senses? Is there some fact of the matter about, say, how many senses species-typical humans have and what they are? If not, what should we say about the metaphysical standing of the individual senses? To get the idea of what might be at stake here, let me point to some related metaphysical questions.

Species: Species are clearly a central ontological category within the science of biology—it is no accident that Darwin's book was entitled *On the Origin of Species*. It is important, therefore, to understand the metaphysical nature of this central concept, and this in turn is a vexed issue in both philosophy of biology as well as biology itself. Recently, much ink has been spilled over whether we ought to be realists with respect to species, as well as the closely related question of what is the nature of the species concept.³ Darwin can be understood as overthrowing the *essentialist* understanding of species that had reigned in biology at least since Aristotle. Given that species evolve, as Darwin showed us, then they cannot have the immutable, God-given essences non-evolutionary models proposed. These days, there are those, such as Hull (1978) and Ghiselin (1974), who argue that species are best thought of as spatiotemporally extended *individuals*. Others, such as Kitcher (1984; 1989), argue that species are *sets*, while others (e.g., Boyd (1999), Griffiths (1999)) argue that they are *homeostatic*

³ See Wilson (1999) for a collection of essays on these topics.

property clusters. Still others are one form or another of antirealists about species, e.g., (Stanford 1995) and arguably even Darwin himself. All of this discussion is made relevant, in part, because of the central role that the concept *species* plays in the field. It seems only right that we know exactly what sort of thing we're talking about when biologists develop their theories.⁴

Race: Where *species* is centrally important to biology, race is clearly an important social category, for better or for worse. For many of the same reasons as with species, it is crucial to understand the nature of the category of race. To what extent are racial categories "biologically real"? To what extent are they "socially constructed"? Again, this is a topic of ongoing controversy and discussion. As with species, for centuries race was conceived in essentialist terms, a view K. Anthony Appiah (1996) calls "racialism". Appiah rejects the biological reality of races, arguing instead that race categories are best thought of as identities that individuals chose to take on or which are culturally imposed on them. Others, such as Kitcher (1999) and Andreasen (2005), argue that racial categories do reflect biological realities, but nonetheless argue that such realities cannot support the kinds of discrimination that have historically been associated with them.⁵

I would like to propose that an understanding of the metaphysics of the senses shares some of the same features that make understanding species and race important. Parallel with the concept of species, the sensory modalities are

⁴ A parallel discussion exists in biology and philosophy of biology over the metaphysics of the concept *gene*. As with the debate over the nature and reality of species, there is also debate over whether genes exist and, if so, what is their metaphysical nature, cf. (Beurton, Falk et al. 2000; Moss 2003; Fox Keller and Harel 2007).

⁵ I could have spelled out much the same point about *gender categories* as I do about race here.

centrally important categories to any study of perception. Pick up any number of books about perception, say in sensory psychology or neuroscience or sensory anthropology, and you will find discussions of individual senses. It is not uncommon to find books on perception broken up into chapters, each focussing on a different sensory modality. Further, this division often is presented with little or no discussion of what grounds or justifies such a division. Such a division is taken literally for granted.

That lack of explicit justification for the division of perception into the categories of vision, audition, smell, etc. derives from the trait that the concept of sensory modalities shares with race (and gender): its ubiquity as a human category. While there is some disagreement over the specific senses posited,⁶ the practice of dividing up the senses is apparently universal. As anthropologist Kathryn Linn Geurts (2002) puts it, "...a culture's sensory order is one of the first and most basic elements of *making ourselves human*. I define *sensory order* (or *sen-*

⁶ For example, the Anlo-Ewe of Western Africa count a *balance* sense among the basic senses (see (Geurts 2002)). As sensory anthropologists Howes & Classen (1991) put it,

Other cultures do not necessarily divide the sensorium as we do. The Hausa recognize two senses [citing Ritchie]; "the Javanese have five senses (seeing, hearing, talking, smelling and feeling), which do not coincide exactly with our five" [citing Dundes]. In short, there may be any number of "senses," including what we would classify as extrasensory perception—the "sixth sense." According to the Peruvian curer interviewed by Douglas Sharon in *Wizard of the Four Winds*, for example, a sixth clairvoyant sense opens up when all five other senses have been stimulated through the use of hallucinogens and other ritual elements.... Eduardo, the curer, describes this sixth sense as 'a 'vision' much more remote... in the sense that one can look at things that go beyond the ordinary or that have happened in the past or can happen in the future.'" (257-8)

Oddly, Nudds cites the book that this passage was taken from (Howes 1991) in support of his pronouncement that, "It is possible that some cultures distinguish fewer than five senses (by grouping together two senses we distinguish), but I have not been able to find a description of any culture that distinguishes more than five senses" (311).

sorium) as a pattern of relative importance and differential elaboration of the various senses, through which children learn to perceive and to experience the world and in which pattern they develop their abilities" (5, emphases in original). In other words, Geurts is observing that across human culture, sensory organization is one of the basic ways in which we enculturate our children and teach them who they are and how we all, as humans, interact with our world. Even if sensory categories do not have the powerful social implications that race and gender categories do, there is a value to studying other deeply held conceptual schemes, even if they do not lead to prejudice and injustice.⁷

In sum, the division of perception into different senses is centrally important to the study of perception and such a division is a ubiquitous and central human practice. Given this, it would behoove us to understand what kind of division this talk of the senses involves.

Further, if the discussion and arguments I present in this paper are correct, we (both we, the folk, and we, the investigators of sense) may be more confused about the nature of the senses and what kind of kind they are. If identifying (and, better, clearing up) confusion is a virtue, then I strive for that here.

III. Kinds of Kind

⁷ I'm not convinced that sensory categories are as "innocent" as this implies. One need only look at social attitudes of "neurotypicals" towards those who are blind, deaf, etc. to see that there are likely to be important issues of social concern here. There is a growing body of literature in "disability studies" that is relevant to this point. I only wish to argue that *even if* sensory categories are innocent of such implications, they are nonetheless of interest relative to similarly entrenched categories with more apparent social implications. If they are *not* so innocent, then so much the better for my point here.

What are the possible answers to the question "what kinds of kind are the senses?" Here are a couple of possibilities:⁸

a) Senses as natural kinds: Some division of the senses (leaving open what that division is) constitute a set of natural or scientific kinds. That is, the division of perception into a number of senses is something that is *discovered* about the nature of the universe, not *invented* by humans; it is some kind of mind-independent metaphysical division of the universe. As Bird & Tobin (2010) put it: "To say that a kind is *natural* is to say that it corresponds to a grouping or ordering that does not depend on humans. We tend to assume that science is successful in revealing these kinds; it is a corollary of scientific realism that when all goes well the classifications and taxonomies employed by science correspond to the real kinds in nature. The existence of these real and independent kinds of things is held to justify our scientific inferences and practices" (emphasis in original). Therefore, this reading would say that the senses are kinds analogous to the way in which different chemical elements or, perhaps, fundamental subatomic particles are kinds. At one point, species were taken to be a paradigm case of natural kinds, but as noted earlier, Darwin upended that account.⁹ I'll return to the senses as natural kinds in the final section.

⁸ I do not want to claim that this list is exhaustive. I'm not even sure the options I present are mutually exclusive.

⁹ Hacking (1991) offers a nice overview of the history of this term, tracing its origin back to J. S. Mill and John Venn in the late nineteenth century, although they were only giving a modern label to a concept with roots going back to at least Aristotle.

b) Senses as phenomenal kinds: In an oral response to an earlier paper of mine, Tom Polger once said, "Much of the bad press over qualia is well-deserved; but if there is one place experiential qualities have a safe home, I would've thought it would be with the sense modalities." He is not alone in his intuition; the natural place to talk about the phenomenal qualities of consciousness is the perceptual realm. Philosophers of mind like to speak of the sharp pain of a papercut, the tanginess of a lemon, the deep, velvety red of a rose.¹⁰ The division of the senses into kinds could be the division of conscious perceptual experiences into different categories based on how it feels to experience them. This will be the topic of §V, below.

c) Senses as social kinds: While the senses clearly *can* be divided (we do so and have done so apparently since prior to the invention of written culture), such a division is conventional. Humans divide up the senses in response to cultural conditions. On this account, the senses are kinds analogous to the way that nonverbal gestures can be individuated. For example, in some Arabic cultures, sitting in such a way as to show the soles of one's feet to another is an offensive gesture, whereas Western Europeans might not even recognize sitting in this way as any kind of "gesture" at all. As noted above, this is Nudds' final position on the question and I'll return to this option at the end of §V, concerning phenomenal kinds, below.

¹⁰ Although, as I describe in (Keeley 2009a), the strong association of qualia with *sensory* qualities is a mid-20th-century shift from earlier philosophical practice. This prior use reserved the term for *nonsensory* or *multisensory* phenomenal qualities, such as the feeling of effort or the quale of spaciousness.

d) Senses as functional kinds: Functional kinds are defined by the causal role they play in some larger system, rather than by any constitutive or phenomenal property that they might have. On a functional account, the senses are kinds analogous to the way that the different organ systems of the mammalian body can be individuated into systems: the respiratory system, the digestive system, or the circulatory system, or perhaps better: the way that different parts of any one of those systems can be divided up. It is important, however, to make sure that this use of function is firmly connected to the related-but-different concept of function as it is used in evolutionary theory. This is the topic of the next section, §IV.

IV. Senses as functional kinds

A functionalist is one who claims that psychological states are neither physical nor physiological states of a system but rather that they are Functional states, defined by their role within a causal description of some sort. Putnam (1967) introduces the notion of a functional Description by proposing that psychological systems can be described in relation to a Turing machine framework:

A Description of S where S is a system, is any true statement to the effect that S possesses distinct states S_1, S_2, \dots, S_n which are related to one another and to the motor outputs and sensory inputs by the transition probabilities given in such-and-such a Machine Table. The Machine Table mentioned in the Description will then be called the Functional Organization of S relative to that Description, and the S_i such that S is in state S_i at a given time will be called the Total State of S (at that time) relative to that Description. (226)

Cummins (1975) generalizes Putnam's account and reframes it in more general terms: "a function-ascribing statement explains the presence of the functionally characterized item *i* in a system *s* by pointing out that *i* is present in *s* because it has certain effects on *s*" (741). He notes that we find these kinds of explanatory strategies all the time in the description of artifacts, as when engineers produce schematic flowchart diagrams with symbols representing the different items; items described in terms of the functions they carry out (resistors, capacitors, etc.) (760). Cummins goes on to discuss how,

Functional analysis in biology is essentially similar. The biologically significant capacities of an entire organism are explained by analyzing the organism into a number of "systems"—the circulatory system, the digestive system, the nervous system, etc.,—each of which has its characteristic capacities. These capacities are in turn analyzed into capacities of component organs and structures. Ideally, this strategy is pressed until pure physiology takes over, i.e., until the analyzing capacities are amenable to the subsumption strategy. We can easily imagine biologists expressing their analyses in a form analogous to the schematic diagrams of electrical engineering, with special symbols for pumps, pipes, filters, and so on. Indeed, analyses of even simple cognitive capacities are typically expressed in flow charts or programs, forms designed specifically to represent analyses of information processing capacities generally. (760-761)

So, in the case of the senses, we can use an approach like this to understand the nature of perception. As Cummins just described, after identifying the nervous system as one of the components of an organism, it is then further analyzed into its components, one of which would likely be a *sensory system*, alongside the *motor system*, as well as any number of systems situated between the "input" and "output" of the organism. Further, this sensory system would be fur-

ther analyzed into the different subsystems that we commonly think of as the different senses: a visual system, an auditory system, and so on. This is a not unreasonable way of capturing what some sensory scientists do in neuroscience and psychology.

It is important to keep in mind that these functional kinds are also functions in the sense of evolutionary biology; they are Darwinian functions that explain why organisms have evolved to have the traits that they have.¹¹ This characteristic of functional kinds is important for re-identifying those kinds in different evolutionary lineages, such as when biologists speak of the convergent evolution of vision in different taxa: Both vertebrates (e.g., humans) and mollusks (e.g., octopus) have evolved vision and possess eyes, but biologists believe that the most-recent common ancestor of vertebrates and mollusks had neither eyes nor vision. Given that humans and octopus eyes are physically different (as a result of their unrelated phylogenetic origins) what makes these structures both "eyes" is that they share an identifiable evolutionary function.

This is the sort of approach that Nudds (2011) has in mind when he speaks of "psychological kinds"¹²:

My suggestion, then, is that the most plausible explanation of the distinction we make between senses is that we distinguish perceptions into perceptions of different senses on the basis of a reflective understanding of how those perceptions were produced. In doing so, we are distinguishing between perceptions produced by different kinds of sensory mechanism, and so our

¹¹ This is a point stressed by philosophers of biology, e.g., (Sober 1985; Kitcher 2003).

¹² Although, Nudds' terminology doesn't map cleanly onto mine. At times he uses the term "psychological kind" to refer to what I'm calling a "phenomenal kind," e.g., p. 336. Part of the confusion is that he sometimes talks of the putative function of the senses as producing certain phenomenal perceptual states.

concepts of the senses must be concepts of different kinds of sensory mechanism. This provides an answer to the question of what constitutes a sense modality. A sense modality just is a kind of sensory mechanism, and all instances of, say, *seeing* something are instances of seeing that thing in virtue of their having been produced by a single kind of sensory mechanism—the sensory mechanism of vision. (314, emphasis in original)

Most of Nudds' paper is an exploration and eventual rejection of this approach. In particular, he understands this approach to require one-to-one mappings of sensory mechanisms onto the functional kinds, a requirement that he argues that contemporary perceptual psychology shows to be violated. Vision and audition (which he considers in some detail) have been shown to involve the operation of multiple perceptual mechanisms, such as the "dual stream hypothesis" of Milner and Goodale (1995; Goodale 1998), according to which there are separate pathways underlying the visual identification of objects (the "what" pathway) and the guidance of motor action (the "where" pathway). On the basis of this and the presence of similar features found by sensory psychologists in the other senses, Nudds concludes:

That, I think, undermines the suggestion that the senses are natural kinds—it undermines the suggestion that the distinction we actually make between different senses tracks a natural distinction between kinds of psychological processes, and it shows that we cannot appeal to the psychological processes involved in perception to answer the question with which I began: What do all instances of seeing have in common in virtue of which they are instances of seeing? Whatever it is they have in common—whatever it is that makes a *visual* perception a *visual* perception—it is not that they are produced by a single kind of sensory mechanism. (335, emphases in original)

A few things should be noted here, in response. First, on Nudds' reading, functional kinds just are a subspecies of natural kind.¹³ This makes sense if we take one of the key features of natural kinds to be that they are human-independent categories. The identification of sensory mechanisms within a functionalist frameworks seem appropriately mind-independent here; they are scientific discoveries, not inventions (if we are to adopt any reasonably realist account of science).

But, second, notice that his functionalist account is one that doesn't make much reference to the *evolutionary* aspects of function. As mentioned earlier, attributions of evolutionary function are useful in heading off the dead-end that Nudds finds himself in his deployment of sensory mechanisms. The sensory mechanisms of the octopus and human eyes are markedly different, but we can identify them both as functionally equivalent because of the role each organ plays in the lives/reproductive fitness of the organisms which possess them. As Kitcher (2003) puts it, "When we attribute functions to entities that make a causal contribution to complexes, there is, I suggest, always a source of design in the background. The constituents of a machine have functions because the machine, as a whole, is explicitly intended to do something. Similarly with organisms" (169). That background evolutionary context allows us to group together sensory

¹³ He also briefly discusses and rejects a few other ways that the senses could be natural kinds. They might be anatomical kinds; that is, we might be able to differentiate the kinds by reference to the anatomical features of their respective sense organs (335-336). This view ultimately founders, he believes, on his claim that any anatomical account must ultimately presuppose a functionalist individuation of sensory mechanisms, an account that he has already shown to be wanting. He also discusses the option that I here describe as phenomenal kinds. In the end, he finds all these accounts wanting and is left with the remaining option that we count the senses we do because it is our social practice to do so, and nothing more.

mechanisms that too narrow a focus on the proximate causal analysis of mechanisms would classify as separate.

So, returning to the earlier point, if the senses are to be natural kinds in virtue of being functional kinds, what NuDDS has shown us is that we cannot understand functional analysis here solely in proximate, psychological mechanism terms; instead, we need to understand functions more broadly in ultimate evolutionary terms, understanding not just the operation of the mechanisms, but understanding the role those mechanisms play in the evolutionary history of the organisms that possess them.¹⁴

V. Senses as phenomenal kinds.

One complication in all this questioning of the kind-hood of the senses is that the senses are not just biological categories, traits possessed by biological organisms. They are also phenomenal categories; that is, they are categories of conscious experience. As such, they lay at the foundation of a very deep way of dividing things up into kinds. They are qualities in the way of speaking where one says, "These two things differ not only quantitatively, but qualitatively." Or, "What we have here is not a difference in degree but a difference in kind."

This connection between this general sense of qualities and the elements of phenomenal experience is borne out by the importance of the concept *quale*/

¹⁴ Two final notes to place this discussion in a larger context. First, I discuss the importance of such evolutionary (and also ontogenetic/developmental) considerations as the importance of understanding the "dedication" of putative sensory systems to particular modalities, see (Keeley 2002: 17-19), for a critical reply, see (Matthen 2012). Second, I should also note that there is some controversy over whether we should be realists with respect to evolutionary function. There are those, such as Dan Dennett, who reject realism about functional attributions. Perhaps unsurprisingly, I side with realists such as Kitcher. See the debate referenced in (Keeley 1999).

qualia to 20th century philosophy of mind. On the one hand, the concept of *qualia* is that they are, in some sense, the basic building blocks of phenomenal experience. Any given conscious experience will have a number of different *qualia* that make it up, including *qualia* of color and smell, as well as emotional tone, feelings of recognition or novelty, and the like. On the other hand, the term itself derives from talk of kinds. According to the *Oxford English Dictionary*, "quale" derives from the Latin *qualis* ("Of what kind") and the term means "The quality of a thing; a thing having certain qualities." So, quale stands as an important link between the idea of sensory qualities and the idea of kinds.¹⁵

There is some sense to saying that there is some kind of fundamental qualitative distinction between the experiences of different senses.¹⁶ It is common to suppose that visual experiences are *just qualitatively different* from auditory experiences. This line of thought naturally gives rise to an understanding of the senses as natural kinds in the sense that the difference between the senses here is *given* to us, not invented by us. Metaphysically, the difference between the senses is as given as the difference between the chemical elements.

However, this account is problematic in a number of different ways. The crucial element of the account is that the basis for the difference between the

¹⁵ I have previously discussed the early philosophical history of the concept "qualia" before. See Keeley (2009a).

¹⁶ As Nudds (2011) observes, "Many philosophers suppose that there is an obvious answer to [the question of what differentiates the senses]. In order to perceive something one must have an experience of it. Seeing something requires having a *visual* experience of it, hearing something requires having an *auditory* experience of it, and so on. The different kinds of experiences involved in perceiving are what constitute perceiving with different senses. We *see* something just in case we perceive it in virtue of having a visual experience of it; *hear* something just in case we perceive it in virtue of having an auditory experience of it, and so on. To answer the question in this way is to give an *experiential account* of the senses." (312, emphases in original).

senses is given in experience. One can challenge the claim that a relevant datum is given.¹⁷

The issues here relate to concerns over the transparency of perception. In debates over the nature of phenomenal experience, there are those who argue that we can never fix on the nature of phenomenal experience *per se*, but that instead we always peer through the experience to that which is represented by the experience. As Block (2007) puts it, the idea of transparency is that, "...when I try to introspect my experience of the redness of a tomato, I only succeed in attending to the color of the tomato itself, and not to any mental feature of the experience. The representationalist thinks that we can exploit this intuition to explain phenomenal character in non-phenomenal terms" (611).

The experience itself is diaphanous, *transparent*. Or, so the transparency thesis holds. This alleged transparency of experience is taken by proponents of a representationalist account of consciousness as a "powerful motivation" for their view (Tye 2000: 45). According to strong versions of representationalism, the phenomenal character of experience is exhausted by the representational content of experience; there is nothing *more* to phenomenal experience beyond what is represented. This view is bolstered by the transparency thesis, in that if all we ever experience is perception is that which is represented in perception—be-

¹⁷ One could also, of course, challenge the concept of givenness itself; one could argue that nothing is *ever* given in experience capable of doing any interesting epistemic work. While I am sympathetic to such a line of argument, here I will restrict myself to the narrower claim that in this specific case, nothing is given in experience that can act as the basis of a way to distinguish the senses into kinds.

cause we “see through” the experience to the represented properties—then there is nothing “left over” requiring a *non-representational* explanation.¹⁸

My concern here is not debates concerning representationalist theories of consciousness.¹⁹ Currently, there are philosophers of mind on both sides and the issue seems to be unsettled. Rather, the issue points to two significantly different ways in which the senses as phenomenal kinds might work. If one rejects representationalism, then one would hold that the experiences of different senses will differ intrinsically; that there is some “vision-y” character that all visual experiences share and which is experienced simply as different from the experiences of other senses.²⁰ On this account, visual experiences would wear their visual status on their sleeves, as it were. Put another way, the sensory modality of a perceptual experience would be *given* in that experience. This brute phenomenal difference between experiences would be the grounds for differentiating different phenomenal kinds; this would ground a literal qualitative distinction of kinds here. Let’s call this view a Nonrepresentationalist Phenomenal Kinds view.

¹⁸ I am greatly compressing a complicated argument here. See (Tye 2000: Ch. 3) for more. For some reasons to demur, see (Kind 2003).

¹⁹ As an aside, in his 2011 paper, Nudds explicitly endorses the transparency thesis and denies that there is anything intrinsic to perceptual experiences themselves that can be used to differentiate the senses (cf., 312ff). In a footnote, he identifies this as a “a fundamental disagreement” with what I say in the opening sentences of my 2002 paper. For the record, I was taking no substantive stand in those introductory sentences. Indeed, I saw myself to be setting up the phenomenon or problem, much as Nudds himself does in the first paragraph of his own recent paper (which I quoted above on page 1).

²⁰ Perhaps because I haven’t read enough on the non-representationalist side of this debate, I’m unaware of somebody making precisely this line of argument (specifically that *the sensory modality* of a perceptual experience is given in experience). Please let me know if you know somebody who makes this specific claim.

Representationalists (because of the transparency thesis) deny the existence of any such intrinsic character of experience beyond what is perceptually represented. Indeed, talk of some "vision-y" character of experience is precisely the kind of thing they are wont to deny. However, this is not to say that they do not talk of phenomenal kinds—their talk of perception is rife with such talk; they just ground it differently. For example, consider the following passages from arch-representationalist Michael Tye. He begins by reminding us of the representationalist view, taking vision as his example:

Visual phenomenal qualities or visual qualia are supposedly qualities of which the subjects of visual experiences are directly aware via introspection. Tradition has it that these qualities are qualities of the experiences. Tradition is wrong. There are no such qualities *of experiences*. If we stipulate that something is a visual phenomenal quality or a quale only if it is a directly accessible quality of experience, then there are no visual phenomenal qualities or qualia. Still there are qualities of which the subjects of visual experiences are directly aware via introspection. They are qualities of external surfaces (and volumes and films), if they are qualities of anything. These qualities, by entering into the appropriate representational contents of visual experiences, contribute to the phenomenal character of the experiences. Thus, they may reasonably be called "phenomenal qualities" in a less restrictive sense of the term. (2000: 49, emphasis in original)

Tye then goes on to point out that such an analysis is not restricted to vision, but instead extends easily to the rest of perception:

All of the above points generalize to other perceptual modalities. For example, we hear things by hearing the sounds they emit. These sounds are publicly accessible. They can be recorded. Similarly, we smell things by smelling the odors they give off. They, too, are publicly accessible. You and I can both smell the foul odor of the rotting garbage. Odors, like sounds, move through physical space. We taste things by tasting their tastes. One and the same taste can be tasted by different

people. Some tastes are bitter, others are sweet. When we introspect our experiences of hearing, smelling, and tasting, the qualities of which we are directly aware are qualities we experience as being qualities of sounds, odors, and tastes. It seems very natural to suppose that among these qualities are the following: pitch, tone, loudness, pungency, muskiness, sweetness, saltiness, sourness. But this supposition is not needed by the argument. The crucial point again is that the qualities of which we are directly aware via introspection—*whatever* they turn out to be—are not qualities of the experience of hearing, smelling, and tasting. Rather, they are qualities of public surfaces, sounds, odors, tastes, and so forth, if they are qualities of anything at all (for, as before, the experiences may be hallucinatory). Change *these* qualities—the ones of which we can be directly aware via introspection—and, necessarily, the phenomenal character of the experience changes. Again, then, phenomenal character is best taken to be a matter of representational content. And again, there are no phenomenal qualities, conceived of as qualities of experiences. (2000: 49-50, emphasis in original)²¹

In these passages, it is clear that Tye is distinguishing between the phenomenal qualities of the different senses. The entire discussion is organized in relation to the different senses. But what exactly grounds these distinctions? The answer is revealed when Tye responds to counter examples raised by Ned Block (1995; 1996) and others that there are cross-modal cases where we have *different* phenomenal experiences despite those experiences having the *same* representational content, as when we come to know that there is a round surface in front of me either by *seeing* that surface or by reaching out and *feeling* it with my hands. In this case, there is a clear phenomenal difference (seeing vs. tactually feeling a surface) despite the same representational content (that there is a round surface 15 centimeters in front of my nose).

²¹ In the passages that follow these, Tye similarly extends his account to cover the rest of phenomenal experience, including bodily sensations (including pain), moods and emotions.

In responding to this kind of counter example, Tye has to lay out how a representationalist distinguishes phenomenal kinds of one modality (visual) from another (tactile):

One obvious immediate reply the representationalist can make is that in seeing the shape, one has an experience as of color. But color isn't represented in the content of the haptic experience. Conversely, temperature is represented in haptic experience but not in the visual one (or at least not to the same extent). Likewise, there is much more detailed representation of degree of solidity in the haptic experience. Another representational difference pertains to the location of the shape. In vision, the shape is automatically represented as having a certain two-dimensional location relative to the eyes. It is also normally represented as being at a certain distance away from the body. In the haptic case, however, shape is represented via more basic touch and pressure representations of contours derived from sensors in the skin.²² Here the shape is represented as belonging to a surface with which one is in bodily contact. Moreover (and relatedly) in the haptic experience, there is no representation of the shape's two-dimensional location relative to the eyes. Finally, and very importantly, in the visual case, there is representation not only of viewer-independent shape but also of viewer-relative shape (e.g., being elliptical from here). The latter property, of course, is not represented in the haptic experience.²³ (95)

This then allows us to spell out what I will call the Representationalist Phenomenal Kinds view. What Tye seems to be proposing here is that we can

²² I have no idea why Tye thinks these are "more basic" or even what this means in this context.

²³ As with the previous footnote, I also find this last point somewhat baffling. In claiming that the haptic sense does not represent the body-relative position of the surface, Tye must be distinguishing the contents of proprioception from those of pressure sensation. That is, if I feel my fingers pressed up against a surface 15cm in front of my face, the pressure sensors themselves do not give rise to that representation of distance; that distance representation is a product of the simultaneous proprioceptive sense of the positions of my limbs at that moment (elbow and wrist bent just this much, etc.) Fine, but it is odd to segregate pressure and proprioception sensation while simultaneously lumping pressure and temperature sensation together as a single sense of "touch" despite the fact that these are carried out by different peripheral sensory systems in the skin. At least, without further discussion, these distinctions seem arbitrary, especially given that the sense of touch is famously the most problematic for a proper objects account of the senses (see (Keeley 2002; 2009b)).

distinguish between the different senses on the basis of what Aristotle called the "proper" or "special objects" of perception.²⁴ The proper object(s) of a sense are those qualities that *only* that sense can elicit; for example, we only come to experience color by vision, only come to experience temperature through touch. This exclusive connection between each sensory modality and some particular proper object experienced as a result of its action—color for vision, temperature/pressure for touch, odor for smell, flavors for taste, pitch/loudness for hearing—gives us a representationalist means for dividing up the senses into distinct categories. And circling back to the points made at the beginning of this section, pitch, flavor, color, etc. are paradigm examples of "qualities" at play when we talk about differences of quality vs. difference of quantity. The difference between a whisper and a nearby crash of thunder is a difference of *quantity* (of loudness) whereas the difference between a whisper and a nearby flash of lightning is a difference of *quality*.

A phenomenal kinds account of the senses—in either the Representationalist or Nonrepresentationalist version—is interesting and has a degree of plausibility in the way that it matches up with our own perceptual experience. In the end, it may turn out to offer a coherent and empirically-adequate account of the division of the senses into kinds. However, I have my doubts.

First, I don't understand how such an account can make sense of senses that lack any phenomenal character, such as a putative "pheromone (or vomero-

²⁴ I discuss this Aristotelean approach at length in (Keeley 2002; 2009b).

nasal) sense" in humans.²⁵ Some scientists report a phenomenon akin to the once-common philosophical example of "chicken sexing" whereby subjects can reliably make behavioral discriminations of vomeronasal stimuli, but these same subjects report no phenomenal differences in their experiences. They feel as though they are guessing. Proponents of phenomenal kinds can simply (and consistently) deny that this putative sense actually *is* a sense; indeed, they seem to be forced to. OK, but what of the senses of non-human animals; especially those where the presence of a vomeronasal sense is well established, and is studied alongside other senses? How exactly do we make the sense/nonsense distinction in nonhuman animals; that is, how do we tell when they are "guessing" or acting unconsciously? Again, it would be consistent for believers in phenomenal kind accounts of the senses to deny that animals have senses, but that seems to be a more draconian move, to say the least.

A second problem for phenomenalist accounts is that recent work in sensory psychology is increasingly undermining the empirical viability of the proposed connection between senses and their unique qualities. In other words, scientists are increasingly showing that, in practice, the phenomenal qualities of experiences we have are the product of multiple senses, not just one. So, in the McGurk effect, the sound that you hear is a product of *both* what your ears hear *and* what your eyes see. Change (only) what the eyes see (in this case, what an

²⁵ I raise this example in (Keeley 2002: 23ff). Noë (2004: 107-111) and I (Keeley 2009b: 231-238) have debated issues related to this. Although Noë explicitly attempts to avoid endorsing a phenomenalist account, I argue that he nonetheless ends up running into the same problems that somebody such as Tye will need to overcome.

interlocutors lips look like) and your auditory experience changes.²⁶ Similar results have been found for other sensory combinations: what you hear effects what things taste like, what you hear effects what things look like, etc.²⁷ This is important for the representationalists because, such cases threaten to show that the representational feature they need to be uniquely connected to a given sense (if it is to play the role of identifying the phenomenal kind) is not, in fact, unique.

For the nonrepresentationalist, these results from sensory psychology are threatening in a slightly different way, which brings me to my third concern with phenomenalist accounts of the senses. In arguing that the senses can be differentiated into kinds by the presence of some given phenomenal quality, such accounts ignore the potential theory-ladenness of introspection. What the theory-ladenness of introspection means is that what we experience (and therefore what we can claim to introspect) is, in part, a function of the theoretical categories we bring to that introspection.²⁸ If this is the case, these experienced qualities are not *given*, in that if we had different categories and a different understanding of

²⁶ Of course, calling it an "auditory experience" begs the question here. To the extent that what people report hearing is a product of what effected their eyes, then on the representationalist account, the experience would not be "auditory" but rather some mixture of the two. If there are no unique features represented by individual senses, then the representationalist account will be unable to differentiate perceptions into different sensory kinds. This is my point.

²⁷ See (Calvert, Spence et al. 2004; Spence and Driver 2004) for more on multisensory perception. Also, Nudds (2011: 335) also discusses the importance of multisensory perception for accounts of the senses.

²⁸ In this way, the theory-ladenness of introspection is intended to parallel the thesis of the theory-ladenness of *perception*, familiar from discussions in the philosophy of science, see (Hanson 1958). The idea is that what one observes is, in part, a function of the theory one brings to an observation. For example, in a real sense, what a heliocentrist and a geocentrist observe when peering eastward at dawn is different and is a function of those theories. I take the notion of the theory-ladenness of *introspection* from (Churchland 1985), but he credits ideas found in (Feyerabend 1963).

how the action of our senses gives rise to our perceptual experiences, we experience perception differently. Further, as indicated by the anthropology of senses (see footnote 6 above), humans do, in fact, have different categories and different understandings of the nature and number of senses.

If the theory ladenness of introspection is true, then it would imply that, in essence, the senses as phenomenal kinds are, in fact, in part, a product of social categories. That is, phenomenal kinds would be, in part, reducible to social kinds, in that how one is raised and enculturated would provide one with the categories of sense and these, in turn, would play an important role in how one phenomenally experiences the process of perception. At least, the possibility of the theory ladenness of introspection poses some interesting lines of investigation for sensory anthropologists—a rather young sub-discipline of anthropology—to explore. Does counting balance among one's basic categories of the senses change how one reports experiencing perception?

However, these three worries are just that: *worries*. They involve more open questions to those that want to defend and explicate a phenomenalist account of the senses than refutations of this approach.

IV. Implications and Conclusions

In this paper, I have considered a number of different ways of thinking of the senses as kinds. OK, but which way is the *correct* way? Ultimately, are the senses natural kinds? And, if so, specifically functional kinds? Phenomenal kinds? Social kinds? Some other notion of kinds? My response is to resist the

implication of such questions by resisting the implication that there has to be a *single* answer to the question of what kinds of kind are the senses. I propose that we embrace a form of pluralism with respect to the senses. To see why I say this, however, let me take a quick detour in what might seem to be the opposite direction: the notion that the senses are not any *kind* at all; that the application of "kind talk" to the senses is just a bit confused from the get go.

Consider the following explanation of what a natural kind is supposed to be, taken from the *Concise Routledge encyclopedia of philosophy*: "Objects belonging to a natural kind form a group of objects which have some theoretically important property in common. ... Natural kinds are contrasted with arbitrary groups of objects such as the contents of dustbins, or collections of jewels. The latter have no theoretically important property in common: They have no unifying feature" (Daly 2000: 612-613). Notice that this account of natural kinds has two important features. First, there is the *collection of entities* brought together under the natural kind description ("a group of objects"). Second, there is the *property* that so defines that collection (the "theoretically important property," the "unifying feature"). That is, when we normally speak of natural kinds, there are two components, reflected in the term itself: There are the *kinds* (the collection of entities) sorted according to some property (in this case, a nonhuman, *natural* property. This, in contrast to, say, artificial kinds which is a collection of things delineated by some perhaps arbitrary, human property).

Noticing this reveals that there is something deeply odd about much of the discussion I have engaged in above. Unlike what is the case when considering

situations such as species, genes, races and genders, the sensory examples I have been discussing actually sound much more like the properties that define the kinds and not the kinds themselves. That is, when talking about the metaphysical nature of vision as versus hearing, for example, that nature is closer to talk of the thing by which we define a collection of entities, not the entities themselves. Consider the senses as functional kinds: Vision is a function (a property) that allows one to class certain mollusks and vertebrates (a collection of entities) together into the same category. Even on the less evolutionary reading of functions that Nudds discusses, a sense is identified with a particular perceptual mechanism; possessing that mechanism is something either organisms have or do not. It is a *state* that an entity can (or cannot) be in. Again, the sense is a property not an entity. Or, consider the case of phenomenal kinds: Here it is even more explicit that what we are dealing with are properties (the possession of phenomenal qualities) instead of collections of entities. In all of these discussions, we have not been careful enough to distinguish the properties (e.g., having vision) from entities (e.g., the sighted). The latter are the "kinds"; the former are the properties that define the kinds.

Recognizing that senses are more properly thought of as the defining properties of groups of kinds rather than the kinds (as collections of entities) themselves in turn supports a kind of pluralism in relation to talk of the senses. It is a commonplace to identify a large number of properties possessed by any given entity and it is equally commonplace to cross-categorize the kind-groupings

into which we place a given entity depending on what properties one is attending to.

Further, as the Daly quotation above also stresses, the properties that are important in natural kinds are “theoretically important” properties. It is far from clear that there is only *one* theory—and, hence, only one set of theoretically important properties—in the study of the senses. I take it that my discussion of functional and phenomenal approaches to the senses demonstrates that. The concerns of psychophysicists and philosophers of perception concerned with the understanding phenomenal character of perceptual experience are different from neuroethologists, comparative biologists, and those interested in the evolution of sensory systems. This plurality of theoretical interest begets a plurality of kind-talk. Add in the “folk” (who, according to previously cited anthropologists, do not universally share intuitions about the number and identity of the senses) and you get even more ways of speaking about the senses.²⁹

At the end of the day, I am not confident that I have answered my title’s question to anybody’s satisfaction. I plan to think about it further myself and look forward to your own thoughts. But, I hope I have demonstrated the complexity of the issues involved and will spur you to come up with your own answer.

²⁹ As Haddock and Dupré (2006) put it in their own encyclopedia entry on “Natural Kinds”, “This possibility of diverging intentions suggests that one kind term might be a natural-kind term among a group of scientists (given how they use it) and a functional-kind term among a group of lay persons (given how they use it)” (505). (In their terminology, a “functional kind” is what I’ve been calling a “social kind” here.)

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