Handout #12: Millikan

1. The Problem of "Aboutness" or Mental Representation

We use language to refer to things and we draw diagrams, maps, and pictures to represent various things. How does one thing (e.g., an utterance, inscription or drawing) come to be used to **refer** to or **represent** something else (e.g., a person, place, thing or event)?

Psychological Accounts of Artifactual Representation: According to psychological theories of how language and other symbols are used to represent things, the **intentions** and other mental states of those who use these symbols play an essential role in their having the meaning or content or representational purport they in fact have. (Grice is perhaps the most famous philosopher of language to have developed this line of thought.) I might draw a picture of Peter that looks more like Paul than Peter, but what makes it a bad picture of Peter (rather than, say, a better picture of Paul), is that I drew it in an effort to depict Peter. It was my intention to depict Peter, so that is who it is a drawing of however inaccurate the drawing is.

Note, though, that it is unclear how to develop a similar account of _mental_ representation. When I say, "Paris is lovely in the spring," I use "Paris" to refer to Paris, France: the city. Perhaps this is explained by my intention to use the word "Paris" in this way and the beliefs my audience has about the significance of the word or sound "Paris" when I use it in this way. (I am trying to say something about that city and you take me to be doing this.). But what can we say to explain how my **intention** itself, and the **beliefs** of my audience themselves, come to have **their referential purport** or semantic content? Words get their meaning through their use. Those of who are credited with speaking a language know how the words in that language are used, and we use this as a criterion when judging whether someone understands the language we speak. But it is unclear how to extend this model to cover mental representations. Do mental structures get their meaning through use as well?

Recall Dretske's Incorporation of Use into a Theory of Mental Representation: (1) **Information gets its meaning independently of use through causation or correlation.** No one needs to use smoke for it to carry the information that a fire is burning; no one needs to use the rings in a tree for them to carry information about the age of a tree. (2) But, according to Dretske, these **information-bearing phenomena** (e.g. smoke and tree rings) **come to represent the things about which they carry information, when they are put to use for this purpose** (but not until then).

According to Dretske, this is how we should think of distinctively **mental representations**. My idea of Paris might consist of an image that I put to use in order to reason about Paris, speak about Paris and so on. (This is shockingly close to Hume's theory of general terms.) More basically, my pain represents damage because it is an internal state that carries information about bodily damage (its typical cause), which is used by me to deal with the bodily area in question (by pulling it away from the source of damage, nursing it, etc.) It is only when we learn to use a sensation or image to adaptively respond to events that these sensations or images become genuine representations of what they inform us about.

2. Millikan Preliminary Rejection of Alternatives to Dretske's Account

Proposal 1: a representation "R" comes to represent a phenomenon R, when R is the statistically most common precursor of R.

Millikan's argument against proposal 1: How do we determine the reference classes of which R and "R" are members? How do we figure out which of the precursors for "R" are average or typical?

Proposal 2: a representation "R" comes to represent a phenomenon R, when "R" is caused by or consistently follows upon R as a matter of the proper functioning of the system in which "R" is tokened.

Millikan's argument against proposal 2: Your face turns red as part of its normal functioning when you get sunburned or run hard or enter a tropical environment. But the color of your face does not represent these things.

3. Millikan's argument against Dretske's View of Representation

The Overgeneration Problem: According to Millikan, information is not necessary for representation: a representation can be made from something that is not information in Dretske's sense. So thoughts and other mental representations cannot be defined, as Dretske defines them, as information that an organism learns to use to meet its needs.

Millikan's example: rabbit fear. A rabbit's fear, when triggered by a sound or movement in the bush, represents the presence of a predator. But since rabbits are easy prey, their fear is not normally caused by nor correlated with the actual presence of a predator. So the fear does not carry the information that there is a predator in the rabbit's vicinity (in Dretske's sense), but Millikan thinks a rabbit's fear clearly represents that there is a predator nearby.

Question: Does a rabbit falsely represent that a predator is nearby every time it flees from a noise or movement? Isn't this an interpretation that we are putting on its reaction? You might think there are objective constraints on how we can interpret the rabbit's mind, but join Dennett in thinking these constraints are insufficient to single out a unique interpretation of the sort Millikan attributes. How might this realization affect her argument against Dretske?

Millikan's prior examples: a callus on your finger carries information about where your skin has encountered friction and the changes in the chameleon's skin pigment carry information about the color of the objects in that chameleon's immediate environment, but, Millikan says, your calluses don't represent the high-friction activities that produce them and the chameleon's skin pigment "arrangers" don't represent the colors of the things in its environment.

Question: Do you share Millikan's intuition about these cases?

4. Millikan's Theory: Use is Everything

"It is the devices that use representations which determine these to be representations and, at the same time…determine their content" (501).

Millikan's Theoretical Argument for a Consumer-Oriented Theory of Representation:
"Suppose…that there were abundant 'natural information' in Dretske's sense contained in

numerous natural signs all present in a certain state of a system. This information could still not serve the system *as* information, unless the signs were understood by the system, and furthermore, understood as bearers of whatever specific information they, in fact bear….So there must be something about the consumer that *constitutes* its taking the indicate p, q and r rather than s, t and u. But if we know what constitutes the consumer's takings a sign to indicate p, what q, what r, etc., then, granted that the consumer's takings are in some way systematically derived from the structures of the signs so taken, we can construct a semantics for the consumer's language" (502).

Examples (1) The beaver's tail slap only means "danger" because: (a) when it is perceived as such by the other members of the beaver's colony, they flee the scene, where (b) this is the adaptive function of the tail-slapping display.[1] (2) The wiggle dance of the bee only means "nectar at distance d1 in direction d2 from this location" because: (a) when the dance is perceived as such by other members of the bee's colony, they search for nectar in the relevant location, where (b) this is the adaptive function of the display.

Question: Millikan's consumer-oriented constraints make sense when the information is supplied by one organism and a distinct organism must use it to inform its behavior. *But what if the production and consumption of information takes place within a single organism*? Must the organism interpret its own information-bearing states or structures to use them in the ways it must to convert these states into representations in Dretske's sense? Do we interpret our sensations and relatively automatic emotional reactions to self-attribute beliefs? (This question came up when we evaluated Dennett's theory of belief as in part constituted by attitudes adopted through deploying an "intentional strategy.")

General Lessons Millikan Draws from Examples like Beaver Tail Slaps and Bee Dances: (1) There must be a rule-like connection between the representation and the represented (e.g. between bee dances and the locations of nectar). If the representation does not 'accord" with the phenomena represented, the consumer won't be able to use the representation to perform its adaptive function. (2) Representations always come in groups or systems. (The holism of the mental.)

Question: How does this second condition apply to beaver tail splashes? The bee's dance has parts and aspects which correspond to the various parts of what is conveyed to its colony-mates. But the beaver's tail splash seems like a singular message (like a dog's tail wagging).

How Millikan's Consumer-Oriented Theory avoids the Overgeneration Problem that she poses for Dretske: even if beavers "over splash" their warnings, the adaptive function of the display will be the fitness advantage these displays bestow on beavers who consume the message by avoiding danger on those (perhaps few) occasions on which it is accurate because a predator is really approaching.

Fodor's Disjunction Problem Restated: On causal accounts of content-fixation we need some further principle to explain which of the many causes of the information are represented by that information. For example, a visual perception of a red surface is caused by light reflecting off

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[1] To say this that is the adaptive function of the display is to say that over the course of history, beaver colonies with members who (regularly) splashed their tails when they believed themselves to be in danger had a fitness advantage over colonies that lacked such members so that colonies we perceive today normally contain members who signal danger with a tail splash. The display (or the disposition to splash when afraid of a predator) evolved via kin selection or non-kin group selection.

that surface, but it is also caused by the image on the retina and the processing of the image by the visual cortex. The resulting neurological structure carries information (in Dretske's sense) about all of these things. So how can we recover the intuitive verdict that our visual experience represents the colored surfaces of the objects we see rather than facts about our own eyes or brains? Why not say it represents all of its normal causes or preconditions? Why not say it has a long disjunction of them as its content?

How Millikan's Consumer-Oriented Theory avoids the Disjunction Problem: The structure only represents what its consumers require that it correspond to in order to perform their tasks. We can hypothesize that our minds consume the cortical information for the purposes of navigating through the world and discriminating food, water and other resources from predators and other dangers. It is because consumer systems in our mind-brain use these information for these purposes, that our sensory states represent the surfaces of those objects we discriminate, navigate around etc.

Note that it follows from this that the same piece of information (in Dretsek's sense) can have radically different contents for different animals so long as those animals employ different systems to consume that information.

"Thus, a certain kind of small swift image on the toad's retina, manufactured by his eye lens, represents a bug, for that is what it must correspond to if the reflex it (invariably) triggers is to perform its proper function normally, while exactly the same kind of small swift image on the retina of a male hoverfly, manufactured, let us suppose, by a nearly identical lens, represents a passing female hoverfly, for that is what it must correspond to if the female-chasing reflex it (invariably) triggers is to perform its function normally" (505).

5. Belief Does not Aim at Truth

It is a consequence of Millikan's theory that representations can be largely inaccurate when this does not hinder or significantly weaken their positive affect on the fitness of those organisms that consume them. Evolution does not favor the truth or reliability of belief (and other representations per se). Instead, evolution only favors reliability to the degree that it augments fitness. To the degree that the truth or reliability of a representation diminishes the fitness of an organism, truth and reliability are selected against. This is why psychologically healthy people think they are better than they in fact are. Our beliefs are designed for fitness, not truth.

"If true beliefs are function and false beliefs are, for the most part, no worse than having an empty mind, then even very fallible belief-fixing devices might be better than no belief-fixing devices at all. These devices might even be, in a sense, "designed to deliver some falsehoods." Perhaps, given the difficulty of designing highly accurate belief-fixing mechanisms, it is actually advantageous to fix too many beliefs, letting some of these be false, rather than fix too few beliefs" (503).

Questions: Does reflection on Millikan's account of the fixation of belief content help explain widespread irrationality? Do people believe what we would expect them to believe if they were designed to believe what best promotes some balance of individual and collective reproductive fitness? Does it help explain how difficult it is to secure adherence to those norms of evidence and respect for truth that define responsible science, history and journalism?

6. Human Uniqueness

Millikan argues that the representations that populate our human minds differ from the other representations to be found in the animal world in six ways. No doubt, human minds differ from the control systems of bacteria. **But her arguments for a more substantive claim of human uniqueness are almost all bogus.**

(1) <u>Parochialism</u>: The representations of other animals are tethered to the times and places at which they occur. E.g. the beaver's tail slap means "danger here now." Human beliefs can be about the distant times and places.

Challenge: Crows and other corvids can remember where they have cached seeds and they can solve multi-step problems that require forethought and recollection of what's been achieved in the process.

https://youtu.be/AVaITA7eBZE

See too this recent study: https://aaron-zimmerman.com/wp-content/uploads/2021/03/The-mental-representations-of-crows.pdf

(2) <u>Storage</u>: The examples of the mental representations of animals on which Millikan focused are transient. But she is wrong to assume that only humans "store away" information for future usage. The memory capacities of elephants are legendary.

https://www.scientificamerican.com/article/elephants-never-forget/

(3) <u>Indicative and Imperative Representations</u>: Millikan argues, "Simple animal signals are invariably both indicative and imperative" (507). For example. The beaver's tail splash says indicatively "there is danger here and now" but it also might be said to say imperatively "seek cover"! The bacterium's magnetosome says indicatively "oxygen-free water lies in direction d" but it also says imperatively "swim in direction d."

In contrast, Millikan argues, "Human beliefs are not tied directly to actions. Unless combined with appropriate desires, human beliefs are impotent. And human desires are equally impotent unless combined with suitable beliefs" (507).

<u>Response</u>: this is Humean dogma and it does not introduce a difference in kind between human beliefs and the beliefs of the other animals. Indeed, Millikan allows that intentions are often both indicative and imperative. The "intention-in-action" that guides me as I make dinner or solve a multi-stage problem represents what I am doing, what's been done and what's to be done to finish the task. Value-judgments (like the belief that exercise is good) have both elements too. And both human beliefs and the beliefs of other animals exhibit the kinds of holism we discussed when noting the general trend away from behaviorism toward functionalism in the philosophy of mind.

(4) <u>Humans infer, but the other animals do not</u>.

Millikan is probably right to say bacteria don't infer things from what they observe, but there is a lot of room in between humans and bacteria. Not only do chimpanzees make inferences, they seem to be aware of (and so represent) the inferences of other chimpanzees.

https://aaron-zimmerman.com/wp-content/uploads/2021/03/Chimp-Inference.pdf

(5) <u>Cross Modal Identification</u>: We can easily formulate intentions to act with or on objects we perceive. This implies that the representations involved in the intention are in some way "indexed" to the representations involved in perception.

"Suppose for example, that you intend to speak to Henry about something. In order to carry out this intention you must, when the times comes, be able to recognize Henry in perception as the person to whom you intend to speak. You must identify Henry as represented in perception with henry as represented in your intention…[these] acts of identifying are our ways of 'knowing what our representations represent.' The bacterium is quite incapable of knowing, in this sense, what its representations are about."

This is not a uniquely human feature of cognition. Apparently, goats do this too.

https://aaron-zimmerman.com/wp-content/uploads/2021/03/Goat-ID.pdf

(6) <u>Negation</u>: Millikan argues that negation requires propositional content with subject-predicate structure. If this is right, it's likely that it is unique to human thought as humans are the only animals known to construct and interpret sentences.

<u>Task</u>: Reproduce and evaluate Millikan's argument that negation is only featured in propositional forms of representation. You might look at this recent article on the neural correlate of negation.

https://aaron-zimmerman.com/wp-content/uploads/2021/03/Grodzinsky2020_Article_LogicalNegationMappedOntoTheBr.pdf