Naturalizing Representation Part 2: Function and Teleosemantics

Where we left off:
- Trying to come up with a naturalistic account of what it takes for a mental state to have some particular content / for mental states to represent more generally.
- We’ve looked at simple causal accounts and some of the problems that arise for them, e.g. the disjunction problem.
- The key desiderata we’re after is for the system to be capable of making a mistake.

Aside: meaning is essentially normative. We’re currently treading carefully around the uncertain ground that is the dividing line between the descriptive and the normative, that separates is from ought, looking for a representational bridge over it…

a. Function as a solution to the disjunction problem
Dretske: What is the difference between a thermometer and a paper clip given that we could (in theory) read the temperature from a paper clip?

*Our assignment* of a “job” to the former

“If an information-carrying element in a system could somehow acquire the function of carrying information, and acquire this function in a way that did not depend on our intentions, purposes, and attitudes, then it would thereby acquire (just as a thermometer or a compass acquires) the power to misrepresent the conditions it had the function of informing about. Such functions would bring about a detachment of meaning from cause.” (p.495, emphasis added.)

- A fuel gauge represents that a tank is full of fuel, even if that is caused by the tank being full of water, because that is its function. Its function is what allows it to misrepresent.
- Turns our attention to looking for naturalistically acceptable sources of function.
- Phylogenetic sources: evolution of an organism ⇒ biologically oriented theories of mental representation
- Ontogenetic sources: demands that arise for an individual organism within a particular environment.

Worries about Function as a Solution
It’s still indeterminate what the function of a system (or an element in a system) is.

Magnetotactic bacteria.
- Some bacteria that live in ponds need to avoid oxygen rich water to survive. These bacteria rely on magnetosomes, iron-rich magnetic particles that pull them towards North, away from oxygen-rich surface water and down towards lower-oxygen water.
- Question: what do the magnetosomes represent?
  o Subquestion: what is the function of their magnetosomes?
    ▪ Liberal answer: the presence of oxygen-rich water
    ▪ Conservative answer: magnetic north
Some things have the function of producing things that vary with the world, but that does not mean that those devices represent.

- The dilation of skin capillaries in response to heat
  - This has many causes and effects: substances in the blood, muscular effort, sunburn, overheating….
  - It has multiple functions: bringing blood closer to the surface of the skin, lowering body temperature, indicating to others that the person is hot, lowering chemical indicators in the blood that prompted the response.
    - Does it represent any of those things?
    - Does appeal to function help us?

Millikan: “The devices in me that produce calluses are supposed to vary their placement according to where the friction is, but calluses are not representations.”

**Millikan’s Teleosemantic theory**
RM’s question: “If not every state of a system represents its normal causes, which are the states that do?”

RM’s answer: we need to focus on representation consumption rather than production.

- It’s devices which use representations which determine them to be representations and determine their function…
- So, what is it for a system to use a representation as a representation?
  - Roughly: for it to have used a consistent mapping between representation and content to perform its proper function [doing stuff that contributes to fitness].

Three ingredients:

i. producer of symbols
ii. symbols
iii. consumers.

- Symbols cause behavior in consumer.
- Some consumer responses have led systematically to the survival and reproduction of the representational triad
- “To determine the content of a representation, we consider those past occasions on which consumer systems of the type contributed to selection of that type of system and we ask what mapping between the representation and the world was required for this contribution.” (Neander 2018)

e.g. bee dances communicate the location of pollen. Producer: bees, symbols: dances, consumers: other bees. The response of other bees (seeking pollen in a certain direction) has led systematically to the survival and reproduction of the bees and their continued practice of dancing… (bee colonies which don’t dance die out).

BUT that can only happen in certain conditions (one in which flowers are flourishing, and there aren’t unduly high winds, e.g.) Those are “normal conditions”, in which the responses lead to survival and reproduction, but which are not constitutive of the practice.

(Worry: how hard will it be to distinguish background conditions from the practice itself?)

(N.b. you can be your own audience… you can think of the organism as split in two – both producing and using representations.)
Two shifts
- From producers to consumers
- From function, to normal conditions for proper operation.

Why this latter shift?
- Consider perceptual representations: there is no such thing as the proper response, or even a range of proper responses, to what perception tells us.

“The same percept of the world may be used to guide any of very many and diverse activities, practical or theoretical. What stays the same is that the percept must correspond to environmental configurations in accordance with the same correspondence rules for each of these activities….For example, if the position of the chair in the room does not correspond, so, to my visual representation of its position, that will hinder me equally in my attempts to avoid the chair when passing through the room, to move the chair, to sit in it, to remove the cat from it, to make judgments about it, etc.” Millikan p.289

What does a biosemantic theory say about Dretske’s magnetotactic bacteria?
- What the magnetosome represents is only what is consumers require that it correspond to in order to perform their tasks.
- How do the systems that react to the representation work? What do those systems need in order to do their job?
  o That the pull be in the direction of oxygen free water …
  o It’s univocal that that’s what it represents because the absence of that is the only thing which would disrupt the function of those mechanisms.

Worry: belief fixation and consumption is such a complex, sophisticated activity, it isn’t biologically proper. And if it isn’t a biologically proper activity, then there are no normal explanations for proper performances of human belief, and so a teleosemantic theory can’t explain psychological representation.

Answer: belief fixation and consumption are both complex and biologically proper

“To suspect that the brain has not been preserved for thinking with or that the eye has not been preserved for seeing with- to suspect this, moreover, in the absence of any alternative hypotheses about causes of the stability of these structures-would be totally irresponsible. Consider: nearly every human behaviour is bound up with intentional action. Are we really to suppose that the degree to which our behaviours help to fulfill intentions, and the degree to which intentions result from logically related desires plus beliefs, is a sheer coincidence - that these patterns are irrelevant to survival and proliferation or, though relevant, have had no stabilizing effect on the gene pool?” Millikan p.294

Objections:

Functional Indeterminacy and Fineness of Grain
Indeterminacy Worry#1
- Teleosemantic theories (and their less sophisticated relatives) appeal to function as a way of picking out representational content.
  - But it’s frequently indeterminate
    - what the function of a given behaviour or practice really is, or
    - how to individuated the behaviour which performs a particular function.
- E.g. Is it adaptive for the frog to snap at flies or at small dark moving objects?

Fodor takes the upshot to be that content is more fine-grained than selection histories can account for.

**Indeterminacy Worry #2**
- Relatedly, teleological theories cannot discriminate contents finely enough when properties are logically or nomologically co-extensive, (e.g. triangular and trilateral, renate and cordate) because selection won’t distinguish between these...
- That’s not an accident. It’s because selection is an extensional process, and we’re trying to capture intentional content.
  - This takes us back to familiar worries about the perspectival nature of mental representation. Can selective processes accommodate that?
  - They require a difference in causal powers.

**Indeterminacy Worry #3**
- Many systems or traits are selected for complex causal roles. They don’t do just one thing…
  - But that gives rise to a situation in which there are, in effect, multiple consumers on Millikan’s account, because multiple systems are using the relevant symbols… And that gives rise to indeterminacy wrt the representational content of the relevant symbol.
  - How worrisome is indeterminacy of meaning?

**Swampman style objections**
Cummins: teleosemantics offer us essentially a historical notion of representation. That makes them a poor fit for computational theories of cognition which are committed to an ahistorical notion of representation.

- Imagine a lightning strike brings into existence out of organic matter in a swamp a perfect molecule for molecule replica of you.
- Question: would that replica have the same intentional mental states as you?
- Most people feel we should say that it would…
- Denying that is at odds with physicalism
- But teleosemantic theories can’t accommodate that intuition. Because it will have a different (or no) evolutionary history. And that’s what fixes the content of its intentional states.

Suggested reading: