Jake Chandler

Department of Philosophy, University of Glasgow,
67-69 Oakfield Avenue, Glasgow G12 8QQ
✉ J.Chandler@philosophy.arts.gla.ac.uk

UNIVERSITY *of* GLASGOW

[11] Evolution and Philosophy of Mind

0. Outline

1. **Are functions really selected effects? (ctd)**

1. Are functions really selected effects? (ctd.)

- In the previous session: after outlining the 'dispositionalist' account of function, I pointed out that it had come under criticism.
- *Criticism (1)*: (BF_2) fails to account for the inherent explanatory force of biological function attributions.
- (BF_1), it is claimed, does justice to this by construing function attributions as covert statements about evolutionary histories.
- But consider:
  - *Q*: 'Why do snakes have forked tongues?'
  - *A2*: 'Because forked tongues had the function of enabling chemosens. tropotaxis in the current population's ancestors'.

1. Are functions really selected effects? (ctd.)

- *A2* seems to be - strictly speaking - true, but how does (BF_1) explain *this*?
- If functional facts = selection-historical facts, their relevance to the explanation of future evolutionary trajectories is hard to understand.
- Tentative suggestion on behalf of (BF_2):
  - *Strictly speaking* it is *A2* that is the correct answer to *Q*.
  - *However*, we do typically use the (timeless) present tense construction:
    - *A*: 'The snake's forked tongue has the function of enabling chemosensory tropotaxis'

1. Are functions really selected effects? (ctd.)

- Why? Because the forked tongues of snakes *still have* the relevant function, and to use the past tense would conversationally implicate that this isn't the case.

- Analogy:
  - *Q2*: 'Why didn't Harry come to the party last month?'
  - *A3*: 'Because he has a tendency to feel uncomfortable around academics.'
- *Strictly speaking*, the correct answer to *Q2* would be:
  - *A4*: 'Because he *had* a tendency, last month, to feel uncomfortable around academics.'

1. Are functions really selected effects? (ctd.)

- But this, though strictly speaking true, would be conversationally misleading: it would falsely imply that Harry no longer feels uncomfortable around academics.
- Hence the use of the present tense in *A3*.
- *Criticism (2)*: (BF_2) yields insufficiently discriminate function attributions.
- Mitchell [1998]: real-world case purporting to show that intuitions can grant different functions to systems with identical dispositions, provided that the evolutionary histories of the respective systems differ.
- Her discussion centres around the case of the Monarch/Viceroy butterflies (mentioned in L1).

1. Are functions really selected effects? (ctd.)

- The Viceroy Butterfly (left) has evolved bright markings that are strikingly similar to those of the Monarch Butterfly (right), with whom it shares a common environment. The Monarch is poisonous to the Viceroy's natural predators.

1. Are functions really selected effects? (ctd.)

- Mitchell argues that although (i) the markings of the two species confer identical fitness enhancing propensities, (ii) they nevertheless have distinct functions:

> "Two types of organism… are structurally similar or indistinguishable… the morphological structures have the same future consequences." "The function of conspicuous coloration in the Monarch is to warn the predator of its unpalatability. The function of the Viceroy coloration is to mimic the model and deceive the predator into presuming it is unpalatable and thus avoid predation. The same structure has two functions, one to warn and one to deceive." (Mitchell [1998: 405])

- If Mitchell is right here, (BF_2) is in trouble.
- Can anything be said on its behalf?

1. Are functions really selected effects? (ctd.)

- One suggestion:
  - (ii) is true: we *do* have functional differences, but
  - (i) is false: the difference in function *can* be spelled out in terms of fitness-enhancing propensities.

  (Note: one could in principle also go for denying (ii), and claiming identical functions)
- True, both Monarch and Viceroy markings have a fitness-enhancing disposition – and hence, according to (BF_2) a function - in common:

  (a) the disposition to ward off would-be predators.

1. Are functions really selected effects? (ctd.)

- *However*, Monarchs also differ from Viceroys in that their markings are disposed to bring about a further beneficial state of affairs:

  (b) the disposition to make would-be predators avoid markings of the relevant type.
- Indeed, the Monarch's markings have a further property which the Viceroy's lack: they are a reliable guide to unpalatability.
- They thus increase the probability that predators will avoid the markings, thereby enabling predator avoidance to be brought about more frequently.
- The markings of the Viceroy butterflies perform no such additional function.

1. Are functions really selected effects? (ctd.)

- *Criticism (3)*: (BF_2) cannot handle the issue of 'malformed traits'.
- As I pointed out a while ago, many etiological theorists make provisions to assign functions to 'defective' traits that lack any power to bring about any kind of fitness-enhancing effect, e.g.:
  - glaucomic eyes,
  - collapsed lungs.
- V. roughly: ('defective') traits that were produced in a roughly similar manner to ('healthy') ancestral traits that were in the past selected for because of their disposition to bring about a certain outcome *O also qualify* as having the function to produce *O*.

1. Are functions really selected effects? (ctd.)

- Were these provisions to be (i) successful and (ii) well-motivated, the etiological theory would have a serious edge over its dispositionalist rival.
- Indeed: it isn't obvious how (BF_2) could be relevantly modified to handle these cases.
- However, setting aside (i) for sake of argument, one might want to question (ii): it simply doesn't seem to be the case that, in the biological sciences, defective features are assigned functions.
  - Biochemistry: a denatured protein is said to 'lose its function'.

1. Are functions really selected effects? (ctd.)

- Pathology: one might speak of ‘loss of kidney function’ due to amyloid build-up,…
- Genetics: ‘loss of function’- /‘gain of function’- mutation = mutation resulting in disappearance / appearance of a selectively beneficial capacity.

- Similar comments wrt everyday use of related term ‘purpose’ (in non-biological sense):
  - A heavily policed internet forum might be said lose its purpose as a platform for free-speech.

1. Are functions really selected effects? (ctd.)

- A detention centre might be said to be in danger of losing its purpose as a tool for crime prevention unless measures are taken to prevent the sale of drugs on site.

- If this is so, what went wrong with the etiologist’s intuitions?
- One possible suggestion:
  - We *do* say: ‘kidneys have the function of filtering the blood’.
  - Perhaps the etiologist takes this to legitimate a move from ‘*k* is a kidney’ to ‘*k* has the function of filtering the blood’, irrespective of whether or not *k* is defective.
- But, *strictly speaking*, what we surely mean is ‘kidneys *generally* have the function of filtering the blood.’

1. Are functions really selected effects? (ctd.)

- Before moving on, two last comments on the topic of defective items.
- There is another class of cases that one might have expected the etiological theorist to have granted functions to: '*vestigial' traits* (e.g., the whales' pelvis, mentioned in L7)
- Indeed, these are traits that were produced in a roughly similar manner to ancestral traits that were in the past selected for because of their capacity to do a certain job.
- But of course these are traits that very clearly cannot be said to have functions.

1. Are functions really selected effects? (ctd.)

- A number of defenders of the etiological theory *do* grant this intuition and attempt to do justice to it by modifying (BF1) so as to require '*recent'* selection for ancestral traits (e.g. Griffiths [1993]).
- This, however, raises a number of concerns:
  - Is the move not simply ad hoc?
  - How recent is 'recent'?
  - Is the intuition underlying denial of functions to vestigial traits not simply that functions require the relevant dispositions?

1. Are functions really selected effects? (ctd.)

- Another point frequently made: the possibility of assigning functions to 'defective' traits is crucial to the teleosemantic enterprise.
- Millikan tells us:

  '…just as hearts and kidneys are sometimes diseased or malformed, so sentences and beliefs are sometimes false…' (Millikan [1984:17]).

- But the analogy seems to provide a misleading view of the theory.
- Indeed, the possibility of assigning functions to defective items doesn't appear to play a role in the teleosemantic story regarding false vs true belief.

1. Are functions really selected effects? (ctd.)

- On Papineau's account, for instance, having a false belief doesn't require the relevant desires to be 'defective' in terms of their intrinsic properties, in the sense that a collapsed lung is defective (they can be perfectly well disposed to bring about the relevant types of actions, etc.).
- False belief simply arises from an *uncooperative environment*.
- So the analogy should really run something like this:

  '… just as hearts sometimes operate in the presence of a blood clot or kidneys sometimes operate in the presence of insufficient blood volume, so sentences and beliefs are sometimes false…'.

- *Criticism (4)*: (BF_2) problematically requires the existence of current trait variants in the population.

1. Are functions really selected effects? (ctd.)

- (BF_2) requires that having *T* (and associated disposition to bring about *O*) increases ('positively contributes to') the fitness of the bearers of *T*.
- This immediately raises the following question: 'increases the fitness of the bearers of *T*'… in comparison to *what*?

> 'If a given individual with a certain trait were *not* to have it, what would that individual have instead? There is no such thing, for example, as being *not monogamous*. Is the individual then to be celibate? … Or polygamous? If polygamous, how many wives does he juggle?… Suppose that you didn't have a nose. Well, would you have gills instead? Or maybe a trunk? Or just two holes? A closed flap over the two holes so that you must breathe over your mouth?' (Millikan [1993:40])

1. Are functions really selected effects? (ctd.)

- According to Millikan: the only suitable contrast cases to be considered by the defender of (BF_2) must be *actual variants* within the population of the bearer(s) of the trait.
- This is because:

> 'The notion of superior fitness, as actually used in evolutionary biology, is never taken to attach to any trait in a vacuum or absolutely but rather is understood only relative to alternative traits actually found in the population.' (Millikan [1993:40])

- However, comparison with actual variants leads to problems, according to Millikan: functional traits don't seem to require actual current variants (example of functional traits without actual variants?).

1. Are functions really selected effects? (ctd.)

- Millikan's conclusion: the etiological account, which makes reference to past fitness advantages in comparison to *historically* present variants, should be preferred.
- No time here to try to give a response on (BF_2)'s behalf.
- One consideration: is the requirement of historically present variants any more intuitive?
- This completes my discussion of the possible 'ditch-the-etiological-theory-of-function' reply to the 'instant replica' objection to teleosemantics.
- For further criticisms of the dispositional theory, see Millikan [1993]. Boorse [2002] makes a number of points in favour of ahistorical accounts and against the etiological theory.

1. Are functions really selected effects? (ctd.)

- Final point to note:
  - With respect to the teleosemantic project, it doesn't matter that much whether or not the 'account of biological function' that one plugs into a teleosemantic theory is a good account of *biological function*.
  - What really matters is whether or not the *resulting teleosemantic theory* provides a good account of mental content.

Reference

- Boorse, C. [2002]: 'A Rebuttal on Functions', in A. Ariew, R. Cummins and M. Perlman (eds.) *Functions: New Essays in the Philosophies of Biology and Psychology*. Oxford: Oxford University Press, 63-112.
- Griffiths, P.E. [1993]: 'Functional Analysis and Proper Functions', *British Journal for the Philosophy of Science* 44(3): 409-422..
- Millikan, R.G. [1984]: *Language, Thought and Other Biological Categories*. Cambridge MA.: MIT Press.
- Millikan, R.G. [1993]: 'Propensities, Exaptations and the Brain', in her *White Queen Psychology and Other Essays for Alice*. Camb. Mass.: MIT Press.

Reference

- Mitchell, S.D. [1998]: 'Function, Fitness and Disposition', in C. Allen, M. Bekoff and G. Lauder (eds.) *Nature's Purposes: Analyses of Function and Design in Biology*. Cambridge MA: MIT Press, 395-415

Next lecture: ‘Evolution and Philosophy of Mind (ctd.)’

- No reading.