

## Cognition beyond the human domain

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(post-print del autor)

Carrie Figdor, *Pieces of mind: The proper domain of psychological predicates*, Oxford and New York, Oxford University Press, 2018.

Psychological predicates are ordinarily used for humans and other animals, including cetaceans, birds and the great apes. Let us call this the ordinary domain of psychological predicates. In addition, in their scholarly publications biologists, neurologists and cognitive scientists have lately begun to use some psychological predicates for other living things, including insects, plants, unicellular organisms and cells themselves. Let us call this the unexpected domain of psychological predicates. Noting this late trend, in her book *Pieces of mind* Carrie Figdor raises the following question: what is the proper domain of psychological predicates: the ordinary domain alone or the ordinary and unexpected domains alike? The question divides into two: one metaphysical, the other semantic. The metaphysical question is whether psychological properties are intelligibly present in the denizens of the unexpected domain. (Intelligibly, rather than truly, because the truth of the claims made by scientists is not to the point; see pp. 62 and 67.)<sup>1</sup> The semantic question is whether scientists are using psychological predicates literally when they apply them in the unexpected domain. Figdor's own answer to these questions is that current evidence supports the presence of psychological properties in the unexpected domain (a view she dubs Anti-Exceptionalism), and that as a result scientists' use of psychological predicates in that domain is meant, and must be understood, literally. Figdor labels her overall position Literalism, and devotes the length of the book to defend it.

Figdor's defence of Literalism is in three stages: first, the positive case for Literalism (chapter 4); second, the case against the alternatives to Literalism (chapters 5 to 7); and third, the refutation of two alleged undesirable consequences (chapters 8 and 9). The defence of Literalism takes off from a series of study cases, in which psychological properties are ascribed by scientists to fruit flies, plants, bacteria and neurons (chapters 2 and 3). In addition, an introduction (chapter 1) and a conclusion (chapter 10) help frame the discussion.

With this background in place, the aim of this review is to assess Figdor's overall defence of Literalism. To that effect, section 1 will summarize the main tenets of the book, whereas sections 2 and 3 will provide some critical analysis.

### 1. Figdor's defence of Literalism

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<sup>1</sup> Unless otherwise stated, page numbers refer to Figdor's book.

As stated, Figdor’s starting point is the linguistic behaviour of scientists, i.e. their use of psychological predicates for such living things as fruit flies, plants, bacteria and neurons in their scholarly publications. How should this be understood? A nice aspect of the book is that its central chapters helpfully elaborate a map of the different semantic options in dispute. As shown by diagram 1 (see below), the options can be organized in a tree structure as answers to a series of questions, starting with “Are psychological predicates used meaningfully in the unexpected domain?” On the one hand, answering the question in the negative provides the first option, namely the Nonsense view, exemplified by Bennett and Hacker’s critique of neuroscientists’ ascription of psychological properties to neurons and neural assemblies. On the other hand, answering the question in the positive prompts a further question, i.e. “Are meaningful psychological predicates used literally in the unexpected domain?” A negative answer to this leads to the second option, namely the Metaphor view, attributed to Sellars and Searle. In turn, a positive answer leads to an additional question – namely, “Are literal uses of psychological predicates univocal across ordinary and unexpected domains?” Denying that they are delivers the third option, namely the Technical view, according to which in the unexpected domain psychological predicates pick out a different property to the one they pick out in the ordinary domain. Finally, an affirmative answer delivers the fourth option, i.e. Figdor’s own Literalism: in short, the view that psychological predicates are used meaningfully, literally and univocally across the expected and unexpected domains.

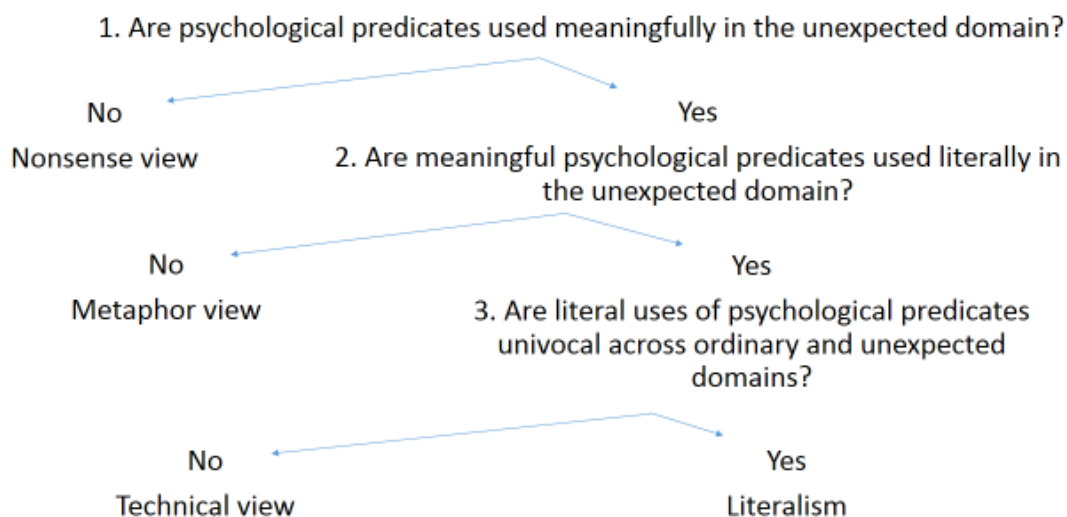


Diagram 1: Figdor’s map of semantic options

But what is Figdor’s case for Literalism? As already stated, it comes in three stages. The first stage is an argument that could be reconstructed as follows:

THE ARGUMENT FROM QUANTITATIVE MODELS

1. The explanation of observable natural phenomena is (at least sometimes) a matter of quantitative (or mathematical) models.
2. Sometimes, psychologically-construed quantitative models explain phenomena in both the ordinary and the unexpected domains.

3. Therefore, on those occasions the explanation of observable natural phenomena in the unexpected domain involves meaningful, literal and univocal psychological ascriptions.

Premiss 1 reflects common explanatory practices in contemporary science, as in the Lotka-Volterra model. The model was initially designed to account for variations in the population of shark and cod over time (in a particular area) as a result of predation, and was later extended to cover similar predatory relations among land mammals, and elsewhere (pp. 36-41). Premiss 2 is supported by two study cases, namely the drift-diffusion model (DDM) of decision (pp. 43-8) and the temporal difference (TD) model of classical conditioning or learning (pp. 49-55). For, as claimed by Figdor, each of these models has been successfully extended beyond the human case to explain the observed behaviour of fruit flies (*Drosophila melanogaster*) and neurons, respectively. From these two premisses, Figdor concludes the truth of Literalism. For if both models are construed psychologically when applied to humans (i.e. as models of decision-making and learning, respectively), and if they fit non-human domains too, then they must be construed in the same psychological terms in the latter domains. In turn, this means that the psychological predicates used pick out the same property in all domains; hence, that they are used, and must be understood, meaningfully, literally and univocally.

An analogy with non-psychological natural-kind terms like “gold” (pp. 5, 13 and 62) can help assuage the sceptical doubts of some readers regarding the conclusion of the argument, or so Figdor thinks. Thus, although “gold” was used originally to pick out an observational property, the scientific research leading to the discovery of the non-observable chemical properties of gold (e.g. its atomic number) has helped make the reference of the term, and the communicative intentions of speakers, more precise. In Figdor’s own words, “scientific evidence [has been given] priority over human perception.” (p. 13) Similarly, although in ordinary use the reference of psychological predicates is tied to the human perspective, scientific tools (e.g. quantitative models) “enable us to escape from the parochialism of our phenomenal perspective.” (p. 68) Figdor dubs this the priority of science over common-sense intuition regarding the extension of the psychological natural kinds under discussion (p. 5).

After the argument from quantitative models, the next stage in Figdor’s defence of Literalism is her case against the alternatives to it, i.e. the Nonsense, Metaphor and Technical views. Figdor’s overall strategy reflects her opinion that Literalism is the default option (p. 60), judging by what scientists say; therefore, in order to defend Literalism it is enough to show that no convincing alternative has been put forward. Let us consider each in order. To begin with, according to the Nonsense view, psychological ascriptions to neurons (and other living things in the unexpected domain) break the rules for the meaningful use of psychological predicates; and as no new rules are provided, the ascriptions turn out to be meaningless. Figdor’s reply is that the rules for the meaningful use of psychological predicates have changed, as they partly depend on the evidence provided by the quantitative models widely employed throughout the life sciences, including neuroscience (p. 96). Therefore, contra the Nonsense view, psychological ascriptions in the unexpected domain have not been exposed as meaningless.

Next, according to the Metaphor view, psychological ascriptions in the unexpected domain are meaningful, but non-literal. The view is grounded in the idea that to the extent that meaning is a context-dependent matter, a continuum of uses, some literal and some not, must be allowed. This accounts for the difference between psychological ascriptions in the ordinary and unexpected domains; for these are different contexts, and meaning varies accordingly: in

ordinary contexts psychological predicates have their standard (or literal) meaning, whereas in the unexpected contexts psychological predicates have a non-literal (or metaphorical) meaning, continuous with the former. Figdor's response to this is that the Metaphor view lacks independent motivation; that is to say, motivation that does not involve a prior (and question-begging) commitment to the rejection of Literalism (p. 110). The needed independent motivation may come from the usual tests for metaphorical status, such as the 'is-like', troponym or incongruity tests (pp. 113-8). However, Figdor claims them to be inconclusive: for, either they do not elicit a clear-cut judgement of metaphorical meaning for the use of psychological predicates in the unexpected domain (p. 112); or else if they do, it is at the cost of presupposing that psychological predicates have a human-specific semantic core (pp. 124-5), which in turn begs the question against Literalism. Therefore, contra the Metaphor view, psychological ascriptions in the unexpected domain have not been shown to be non-literal.

Finally, according to the Technical view, psychological ascriptions in the unexpected domain are both meaningful and literal, but non-univocal. As stated earlier, this is the view that psychological predicates pick out different properties in the ordinary and unexpected domains. According to the Technical-Behaviourist variant of the view, a behavioural rather than a cognitive property is picked out in the unexpected domain. Figdor protests that the distinction is unprincipled, especially in view of the evidence provided by quantitative models, which cover both domains (pp. 135-6). According to the Exsanguinated Properties variant, psychological predicates pick out attenuated or deflated, rather than full-blooded, cognitive properties in the unexpected domain. Figdor objects that an aura of mystery surrounds such properties, which are characterized in negative terms, thereby assuming a question-begging human-specific standard for full-blooded cognitive properties (pp. 142-4). Therefore, contra the Technical view, psychological ascriptions in the unexpected domain have not been proven to be non-univocal.

The final stage in Figdor's defence of Literalism is the refutation of two alleged undesirable consequences. The first is that Literalism falls foul of the homuncular fallacy; the second, that it seriously disrupts our current moral boundaries. Each worry will be taken up now. First of all, the homuncular fallacy arises when decompositional explanations in psychology invoke the cognitive activities to be explained. For instance, when intelligent behaviour (a cognitive trait) is explained in terms of intelligent components. As a result, the purported explanation is in fact idle or empty. This is allegedly the case with Literalism, in so far as such components of brain-based minds as neurons and neural assemblies are ascribed the psychological properties in need of decompositional explanation. However, Figdor disagrees that contemporary mechanistic explanations in psychology require ever more unintelligent components at each lower level. On the contrary, as in the quantitative models mentioned earlier, psychologically-construed equations can be invoked at different levels in decompositional explanations (pp. 152-8). Furthermore, naturalism is not compromised by doing so, for quantitative models provide a naturalist explanation of the mind (pp. 159-60). Overall, then, the homuncular fallacy is not a worry for Literalism.

The other alleged undesirable consequence is that Literalism disrupts our current boundaries regarding moral status, given that the latter is associated with the possession of certain psychological properties, and Literalism ascribes them univocally not only to humans and the higher animals, but also to insects, plants, bacteria and neurons, to which moral status is not normally ascribed. Figdor retorts that epistemic discoveries do not determine our moral

judgements, for moral status can be claimed to be dependent not on the possession of the core psychological properties found across the ordinary and unexpected domains, but rather on the human-specific features of psychological properties (p. 171). This is so at least in the short term, for Figdor acknowledges that the long-term impact of Literalism is that it will motivate us to overcome our default moral anthropocentrism (pp. 178-9). Figdor considers this to be a good thing, and concludes that the alleged disruption of our current moral boundaries is not a problem, either in the short or the long term.

To be sure, Figdor asks a timely question in view of the data she assembles, and presents *prima facie* compelling reasons for the answer she gives. But is her overall defence of Literalism persuasive? Two points will be addressed over the next two sections. First, is her positive case for Literalism fully successful? Second, has she ruled out all the alternatives to Literalism? There are grounds to return a negative answer to both questions, for on the one hand, the positive case for Literalism appears to beg one crucial question; and on the other, there is an alternative to Literalism that has not been ruled out.

## 2. Literalism and the argument from analogy

In Figdor's argument from quantitative models, Literalism is the result of an inference to the best explanation (pp. 63ff). Figdor's mould is the traditional argument from analogy, in which the probable existence of other people's mental states is inferred from the similarity between their and one's own behaviour. This is the best explanation in terms of simplicity, for a plurality of behaviours (not just one's own) is uniformly explained with the same tools – namely, the postulation of underlying mental states. In a related manner, Figdor endorses a template she calls “the New Argument” (p. 64), in which from a scientist's (hypothetical) development of a psychologically-construed quantitative model for the explanation of his own behaviour, an inference is drawn to the effect that the same psychological explanation accounts for the behaviour of others to whom the quantitative model applies. The argument is “new” not only in the appeal to quantitative models, but also in that it can be extended to non-human others, notably fruit flies and neurons. Yet, it is still a case of an inference to the best explanation, because the same psychological processes explain quantitative similarities between human and non-human behaviours. To be sure, Figdor's comparison with the traditional argument from analogy helps her quickly make a case for Literalism, but the flip side of this is that her strategy inherits the limitations of the argument from analogy; or so will be argued next.

What limitations? Canonical presentations of the argument from analogy (e.g. Mill 2009 [1865], Russell 1948) depict it as a fitting reply to the sceptical question if others are minded beings or mindless automata, instead; in other words, the question whether there are other minds. For this reason, in order not to beg the question at hand, the premisses of the argument only mention other people's behaviour, not their mental states. But this meagre basis is insufficient to infer the probable existence of other minds, once the logical possibility has been raised that others are mindless automata (i.e. the possibility that others are behaviourally equivalent to minded beings, despite lacking minds).

To see this, consider a dystopian possible world in which after a period of cohabitation between minded humans and behaviourally look-alike automata, all human beings but one die out. Unaware of this fact, one day the only surviving human begins to wonder if the other individuals that he encounters daily and resemble him bodily and behaviourally are really

minded beings or, instead, mindless automata. Having received a philosophical education in the past, he reasons that the other individuals are probably minded beings, as this is the simplest explanation of the bodily and behavioural similarities between them and himself. But he is wrong; they are mindless automata. In this dystopian scenario, despite the similarities in behaviour, a less simple explanation is correct. It is a less simple explanation in that similar behaviours are explained with different tools, i.e. the postulation of mental states in some but not all cases.

The take-home lesson is that focus on simplicity alone risks begging the crucial question at hand. The crux lies in that in posing the problem about the existence of other minds, the logical possibility of mindless automata is raised; whereas in solving it through simplicity alone no grounds are provided to refute that possibility, which appears to be forgotten. The dystopian scenario is a way to make this vivid, as it shows that a less simple explanation is a *bona fide* candidate, one that cannot be casually neglected. In turn, this illuminates our own situation: if the logical possibility that others are mindless automata is raised *ab initio*, the traditional argument from analogy, understood as an inference based on considerations of simplicity alone, is a blunt tool to use in against the sceptical question to which an answer is sought.

Despite this, the traditional argument from analogy could still be an adequate response to a related, though ultimately different, question – namely, what the particular mental states of others are on specific occasions. This is a different question, because in posing it others are assumed to be minded beings, and the enquiry focuses on their particular mental states at specified times. To answer this new question, the logical possibility that others are mindless automata does not have to be explicitly ruled out, as it has not been raised. As a result, premisses about other people's behaviour, and their similarity to one's own behaviour (in like circumstances and so on), might turn out to be a sufficient basis to infer the probable existence in others of mental states similar to one's own. In turn, what this means is that the argument from analogy can be assessed in two different ways, depending on the question it is a response to. It is not a fitting reply to the general question about the existence of other minds, but despite this it could still be an adequate response to the question about the particular mental states of others on specific occasions, if their general minded status is conceded. These are the limitations of the traditional argument from analogy.

In so far as Figdor moulds her case for Literalism on the argument from analogy, her argumentative strategy is exposed to the same limitations. Certainly, Figdor does not raise the logical possibility of mindless automata. But consider the question she does raise: is the proper domain of psychological predicates the ordinary domain alone, or both the ordinary and the unexpected domains? Against this backdrop, she considers whether psychological properties are intelligibly ascribed to, say, fruit flies and neurons. But the latter can be understood in one of two ways: either, as the question whether fruit flies and neurons have general cognitive status (i.e. whether they are decision-makers and cognitive adaptive systems, respectively), or as the question whether fruit flies and neurons instantiate particular cognitive processes (i.e. particular decision-related or anticipation processes, respectively). Now, as the earlier discussion of the argument from analogy has shown, an inference to the best explanation from quantitatively similar behaviour will provide at most an answer to the latter, not the former, question. Therefore, as with the traditional argument from analogy, what Figdor's argument from quantitative models shows at the most is that particular cognitive properties can intelligibly be ascribed to fruit flies and neurons, once their general

cognitive status has been conceded. These are the limitations of the argument from quantitative models.

Interestingly, Figdor's discussion acknowledges them, albeit implicitly. Thus, reporting the results of one experimental study aimed at extending the drift-diffusion model (DDM) of decision-making to fruit flies, in which two different conditions are distinguished, i.e. the FoxP mutant and the wild-type conditions, she writes:

"The study did not aim to show that fruit flies make decisions. The goal was to see if the genetic mutation made a difference to their decision-making as measured by differences in speed of response and accuracy by mutant and wild-type flies at the same levels of difficulty. [...] Given its fit to both human and fruit fly data, the model helps justify the ascription of decision-related component cognitive processes posited by the model (e.g. evidence accumulation) to the intended target populations of decision-makers. [...] The key ... is whether I should construe the DDM as being about decision-making processing in others just as I do for myself. For example, it is whether the label 'decision-time' that I use in my construal of the equations refers to the same process in others as it does in me." (pp. 46, 47 and 65, respectively)

Here, the general point that fruit flies are decision-makers is distinguished from the particular point that they instantiate certain component processes of decision-making. Against this background, Figdor's point is that the quantitative model at stake allows (or compels) us to ascribe particular decision-related component processes to fruit flies. But in doing so, the general point that fruit flies are decision-makers is simply taken for granted.

Similarly with a different study, aimed at extending the temporal difference (TD) model of classical conditioning (learning) to neurons. Responding to the objection that the results of the study do not demand a psychological construal in terms of expectancy (anticipation) and representation, Figdor writes that "the reason the psychological language is used ... is that the model [was] developed to explain phenomena to which these concepts already applied, if for qualitative reasons." (p. 55) But if psychological concepts already apply to neurons prior to engagement with quantitative models, then the latter do not seek to show that neurons are cognitive adaptive systems, only that they instantiate particular anticipation (and learning) mechanisms, in line with the limitations of the traditional argument from analogy.

To sum up so far, quantitative models support an inference (to the best explanation) to the effect that fruit flies and neurons instantiate the same particular cognitive processes instantiated by humans, but the inference relies on a prior commitment to the cognitive status of fruit flies and neurons. As the quote in the preceding paragraph makes clear, discharging the commitment involves abandoning quantitative for qualitative considerations. In turn, this means that Figdor's positive case for Literalism does not rely exclusively on the argument from quantitative models. Rather, her view is that qualitative reasons pave the way for quantitative models, in so far as they prove that living things in the unexpected domain have cognitive status, prior to the ascription of particular cognitive processes to them.

So, do qualitative considerations prove the general cognitive status of the living things in the unexpected domain? The appeal to qualitative considerations can be reconstructed as a new inference to the best explanation (although Figdor does not explicitly do so), along the following lines:

THE ARGUMENT FROM QUALITATIVE REASONS

4. The behaviour of humans and the behaviour of the living things in the unexpected domain is similarly flexible and complex.
5. Flexible and complex human behaviour is explained cognitively.
6. Therefore, the flexible and complex behaviour of the living things in the unexpected domain must also be explained cognitively.

As earlier, this is an inference to the best explanation, in terms of simplicity; for a plurality of similar behaviours is uniformly explained with the same tools – namely, the postulation of underlying mental states. But as with the traditional argument from analogy, if the possibility is raised *ab initio* that the bearers of flexible and complex behaviour in the unexpected domain may lack cognitive status, similarity with human behaviour is too meagre a basis on which to infer, on considerations of simplicity alone, the cognitive status of the living things in the unexpected domain. As in the dystopian scenario mentioned earlier, focus on simplicity alone appears to disregard one of the two possible explanations in play – namely, that the flexible and complex behaviour of humans is accounted for cognitively, whereas the similarly flexible and complex behaviour of living things in the unexpected domain is not. For this reason, a charge of begging the crucial question at hand can be levelled here. Therefore, as concluded earlier with respect to the traditional argument from analogy, the argument from qualitative reasons is too blunt a tool persuasively to prove the general cognitive status of fruit flies and neurons (among other living things in the unexpected domain).

Significantly, this drastically qualifies the scope of Figdor’s positive case for Literalism. On the one hand, the target of the argument from quantitative models is not the ambitious claim that fruit flies and neurons possess cognitive status *simpliciter*, but rather the weaker (though unusual) claim that fruit flies and neurons can intelligibly be ascribed particular cognitive processes (decision-making and anticipation processes, respectively), once their general cognitive status has been conceded. On the other hand, the more ambitious claim is the target of the argument from qualitative reasons. Now, if as argued here opponents can object to the latter that it begs the crucial question at hand, Figdor’s positive case for Literalism has been undermined.

To clarify, the point being made is not that Literalism is false, but rather that Figdor’s positive case for it is not fully successful. Thus, in so far as considerations of simplicity alone do not support the idea that living things in the unexpected domain have general cognitive status, the claim has not been proven that the proper domain of psychological predicates includes ordinary and unexpected cases alike.

### 3. Literalism and the No-Core view

In addition to the arguments reviewed so far, Figdor’s overall defence of Literalism rests also on the rebuttal of possible alternatives. As seen, Figdor dismisses three: the Nonsense, Metaphor and Technical views. But are these the only alternatives? Figdor is open-minded about the existence of others, but voices her suspicion that they are likely to be variations on one or other of those explicitly ruled out (p. 145). The point to be made now is that there is one alternative to Figdor’s Literalism that is neither a variation on one of the ruled-out options, nor one she explicitly rules out. As a result, Literalism has not been proven to be the best semantic option to account for the linguistic behaviour of scientists.



As seen, Literalism is the view that psychological predicates are used meaningfully, literally and univocally across both the expected and unexpected domains. But there are two ways to ground this. On the one hand, it could be due the fact that a fixed set of core features is shared across the expected and unexpected domains. On the other hand, it could be due to the fact that some feature or other from an open-ended set is satisfied in the expected and unexpected domains, though not all nor always the same features. Which is Figdor's view? Although she does not consider the question head-on, there is reason to think that when she argues for Literalism she is in fact endorsing the former view.

To see why, consider the analogy with natural-kind terms like "gold", mentioned at several points in the book. Figdor's contention is that scientific research has trumped human untutored observation in order to determine what counts as gold. Similarly for psychological natural kinds: it is scientific research, not human intuition, that determines what processes count as cognitive, regardless of the domain. Importantly for current purposes, in the case of gold, scientific research has established that possession of a particular atomic structure is necessary and sufficient for something to count as gold. This could be called its essence, which must be contrasted with the non-essential features (e.g. colour) that gold shares with similar-looking but ultimately different substances (i.e. pyrite). Likewise in the cognitive case, according to Figdor; for a distinction must be made between the essential (hence necessary) and the contingent features of cognition, the former being common to all cognitive processes, and the latter being specific to some forms of cognition (see e.g. pp. 72-4). Therefore, Figdor's endorsement of the analogy between gold and cognition amounts in fact to an endorsement of essentialism about natural kinds, psychological kinds included.

In endorsing essentialism, Figdor is committed to the view that there is a fixed set of core features that all cognitive processes (and only them) share, whatever the domain. As stated, this is one way to defend the claim that psychological predicates are used meaningfully, literally and univocally across the expected and unexpected domains. For another, consider the claim that categorization is a family-resemblance matter, in so far as instances satisfy some of an open-ended pool of features, though not all nor always the same feature(s). In so far as a core of necessary (and sufficient) features is not required for categorization, this could be called the No-Core view. Applied to the cognitive case at hand, what it means is that processes in different domains can satisfy different features from the open-ended pool; even that some processes satisfy more of those features than others. Nonetheless, in so far as all processes satisfy some feature or other from the open-ended pool, they all qualify as cognitive. For that reason, the meaningfulness, literalness and univocity of psychological ascriptions is preserved.

To elaborate, consider how in Figdor's own discussion in the book several features pertinent to cognition are distributed in a varied fashion across the expected and unexpected domains:

- Flexible and complex behaviour is ascribed not only to humans and the higher animals, but also to plants (pp. 19-24), bacteria (pp. 24-9), fruit flies (pp. 45-7) and neurons (pp. 49-55, 75).
- The instantiation of quantitative or mathematical models is not only a feature of human processes in the expected domain, but also of the processes undergone by fruit flies and neurons (pp. 43-55). There is no related discussion of plants and bacteria.
- Internal complex relations to folk-psychological states like beliefs, desires and intentions is explicitly ascribed in the expected domain, and explicitly denied to neurological processes (pp. 73-6). Fruit flies, bacteria and plants are not mentioned in this connection.

- Possession of conscious affect or phenomenology is explicitly ascribed to processes in the expected domain, but not neurons (pp. 56-7), whereas other living things in the unexpected domain are not discussed.
- Possession of conceptual content is explicitly ascribed to the states and processes of humans, the higher animals, and even insects (pp. 79-80), whereas other living things in the unexpected domain are not explicitly discussed.
- Communal norm following is explicitly ascribed beyond the expected domain to neurons (pp. 79, 82), and hinted at in bacteria and plants, given their organization in colonies (pp. 27-9).

This is not intended here as a final list of features pertinent to cognition. In fact, contemporary research suggests that the list should be expanded with items not alluded to by Figdor. For illustrative purposes, consider two possible additions – namely, direct perceptual access and empathy (meaning perspective-taking or the ability to put oneself in someone else’s shoes, not sympathetic concern for another’s distress). Let us consider them briefly in reverse order. First, psychological beings are empathetic beings, in so far as they can adopt the viewpoint of others, for an adequate other, whether conspecific or not. Humans, but also the higher animals (Gruen 2017), are said to be empathetic in this sense. But, could empathy be extended beyond the ordinary domain? Perhaps it could be ascribed to some insects, e.g. bees. In a closely studied phenomenon known as the waggle dance, foraging bees returning to the hive communicate to others the direction and distance to the source of the substance they are carrying. In turn, the bees watching the display can use that information to fly to the desired location. This could be said to involve some form of empathy, as follows. Foragers inform others about the flight path they have taken recently (or not so recently), and the rest reverse that flight path to reach a particular desirable destination. Hence, the desired substance is available to all the bees that can take and understand the foragers’ recent (or not so recent) experiential viewpoint. But even if empathetic processes, so conceived, can be ascribed to insects such as bees, it is hard to see how they can be ascribed to plants, bacteria and neurons. So, here again, a certain feature pertinent to cognition is distributed in a varied fashion among living things from the ordinary and unexpected domains.

Second, according to some authors in the phenomenological tradition (e.g. Stein 1989 [1917], Scheler 2008 [1923]) and their current-day followers, some cognitive states and processes can be directly perceived in others without the need for special equipment; for instance, we can see people’s shame in their blushing, and their joy in the way they smile. Suitably generalizing from these examples, the ascription of psychological states and processes is granted not only to humans, but also to the higher animals and insects, in so far as they are able to express themselves. (For plants, bacteria and neurons, see below).

To repeat a point already made, the aim now is not to come up with a final list of features, to the effect that at least one of them must be satisfied for something to count as a cognitive process, or for something to count as an intelligible subject of cognitive processes. For one thing, the list of such features may be open-ended, to allow for the possibility of exotic forms of cognition yet to be discovered. For another, the objective here is to show the availability of the No-Core view, and for that there is no need to supply a final list of features pertinent to cognition.

	Humans	Higher animals	Fruit flies	Bacteria	Plants	Neurons
<u>Figdor's features</u>						
Flexible/complex behaviour	✓	✓	✓	✓	✓	✓
Mathematical models	✓	✓	✓	–	–	✓
Internal complexity	✓	✓	–	–	–	✗
Conscious affect	✓	✓	–	–	–	✗
Conceptual content	✓	?	?	–	–	–
Communal norm following	✓	✓	–	?	?	✓
<u>Extra features</u>						
Empathy	✓	✓	?	✗	✗	✗
Direct naked perception	✓	✓	✓	✗	✗	✗

Table 1: Distribution of cognitive features in different domains. A tick indicates satisfaction of the feature; a cross, a failure to satisfy the feature; a question mark, tentative satisfaction; and a dash, no discussion.

As a summary, consider table 1, in which the features on the list are matched with different living things in the expected and unexpected domains alike. What the table shows is that features are distributed in a varied fashion, for some of the living things satisfy more of the items on the list than others. In particular, fruit flies, bacteria, plants and neurons (Figdor's denizens of the unexpected domain) satisfy less items than humans and the higher animals. According to the No-Core view, what accounts for these differences is the fact that humans, closely followed by the higher animals, are typical members of the category of the cognitive. But this is not the claim that fruit flies, bacteria, plants and neurons do not belong in the category of the cognitive, for they satisfy some features from the list, and therefore can be included in the category (although not as typical members).

This distinction between typical and non-typical membership of the category of the cognitive turns out to be useful for two reasons. On the one hand, it tallies with widespread intuition regarding what is a clear-cut (or a better) instance of a cognitive object or process. On the other hand, it accounts for the linguistic data to be explained. Thus, in so far as psychological categorization is a family-resemblance matter including several features, scientists' special concern with quantitative models vindicates their meaningful, literal and univocal use of psychological predicates beyond the typical human domain. Alternatively, lay people who embrace a less focussed interest may refrain from using psychological predicates for, say, neurons. Again, it is the fact that psychological categorization is a family-resemblance matter with different features involved that both accommodates for lay people's different concerns and linguistic behaviour.

And yet, some may worry that treating humans as typical instances of the cognitive is but a reflection of the anthropocentric bias in cognition. The worry can be allayed, though. According to Figdor, anthropocentrism is the view that a human standard prevents the ascription of cognitive status to things and processes in the unexpected domain. But this is precisely not what the No-Core view recommends. Indeed, according to the No-Core view, talk of the human standard must be understood in terms of typical, not exclusive, membership

of the category of the cognitive. In turn, the claim of typicality is not the anthropocentric bias in sheep's clothing, for if as Figdor herself acknowledges, a principled reconsideration of the extension of psychological predicates is currently under way, there is good reason to help ourselves to the human standard as our guide in this process. Indeed, it is the satisfaction of features typical of cognition that allows us to extend the ascription of psychological properties beyond the human domain. This has already been done in the case of the higher animals, as Figdor herself admits; and there is no principled reason to stop there. Consequently, the human standard is a help, rather than a hindrance.

Nevertheless, led by the analogy with such natural kinds as gold, Figdor fails to make room for the No-Core view. Conversely, endorsing the No-Core view means rejecting the analogy between gold and cognition. But giving up the analogy does not mean rejecting that something like the essentialist view works for *some* scientific categorization. This is in line with recent research (Havstad 2018), for essentialism has been contested as a view about chemical kinds in general, but not as a view about chemical elements such as gold. Moreover, giving up the analogy between gold and cognition does not mean abandoning the role of science in cognitive categorization, for quantitative models are explicitly included on the list of features pertinent to cognition. Instead, what it means is that the cognitive is a category that does not follow the pattern of other scientific categorization, of which gold is a staple example.

But what underlies this difference between natural kinds? Although a full answer exceeds the boundaries of this paper, it can be summarized as follows: unlike gold, psychological kinds lack a hidden essence. This is a twofold claim. The point that psychological kinds lack an essence has already been made. But what about the claim that psychological kinds are not hidden? Here is a sketch of the basic idea. Natural kinds such as gold have hidden essences that chemists strive to unveil, and to do so they go past superficial properties available directly to naked perception, for instance colour. On the contrary, standard instantiations of psychological natural kinds, e.g. belief, desire, decision and learning, are not hidden, but directly available to naked perception by adequate observers. This is so because psychological kinds are intrinsic aspects of expressive behaviour in its proper context. For this reason, perceptually noting the expressive value of some behaviour in its proper context amounts to perceiving the instantiation of some psychological kind at that time. (For more on this, see García Rodríguez 2018.) This is so for humans, but also for other living beings. Thus, some of the behaviour of the higher animals is expressive behaviour directly available to naked perception. Similarly for some of the behaviour of insects and other invertebrates. Hence, the claim that psychological kinds are not hidden.

What about plants and microscopic living things such as bacteria and neurons? As for the former, because of their timescale, their behaviour is too slow for it to be directly available to (our) naked perception. As for the latter, they are too small to be the object of (our) direct naked perception. Nevertheless, on a family-resemblance view of categorization this is not an objection to including them in the category of the cognitive. For one thing, plants, bacteria and neurons exhibit behavioural complexity and flexibility, which are features pertinent to cognition. For another, if membership of the category of the cognitive is a family-resemblance matter, then failure to satisfy one feature (i.e. availability for direct naked perception) does not lead to exclusion from the category, as long as some other feature is satisfied. Therefore, the claim that psychological kinds are not hidden aligns nicely with the claim that they lack an essence.

Here, the analogy with gold has been criticized partly on the basis that psychological kinds are directly available to naked perception, but there is scepticism about this in the literature. The chief strength of the perceptual claim is that it matches the phenomenology, for it is a datum that on some occasions, for some adequate others, their psychological states are directly presented to us in their bodily and behavioural expression. One reason for scepticism is that psychological kinds are high-level properties, access to which is not a matter of direct perception, but rather of attention (Spaulding 2015). But either attention is perceptual, in which case no objection has been raised; or it is not, in which case the phenomenological datum has been disregarded. Certainly, opponents could attempt to explain the datum away as a matter of familiarity, underwritten by a fast and unconscious inference, rather than one slow and conscious. But explaining data away is, here as elsewhere, the last resort; so the claim that psychological kinds are directly available to naked perception is preferable, in so far as it provides a straightforward vindication of the phenomenology.

Another ground for being sceptical about the claim that psychological kinds are directly available to naked perception is that perception of psychological kinds is fallible, which could be taken to support the idea that they must be hidden. But the latter is the wrong conclusion to draw. Of course the perception of psychological kinds is fallible, especially if the expressive beings that are the object of perception are not cooperative enough (i.e. if they are deceitful, or try to be), or if the perceiving subjects are gullible or inexperienced (and as a result they are taken in by deceptive appearances). Nonetheless, the conclusion to draw is not that psychological kinds are essentially hidden; any more than the conclusion to draw when taken in by the deceptive colour appearance of things is that colours are essentially hidden properties of things, hence unavailable to direct naked perception. Therefore, fallibility is not a reason to endorse the essential hiddenness of psychological natural kinds.

Finally, it could be adduced that the existence of hidden neurological mechanisms of cognition shows that psychological kinds are at least partly essentially hidden. But it does only if psychological kinds are treated as a whole, one component of which is the neurological mechanism. However, this adopts a problematic view of psychological kinds as akin to three-dimensional objects. Problematic, because the hidden parts of three-dimensional objects can become available to direct naked perception with a changed viewpoint, whereas neurological mechanisms are always unavailable to direct naked perception. For that reason, a better alternative is to view neurological mechanisms as what sustains psychological kinds, which is why they are pertinent to cognition. This alternative, though, does not make psychological kinds partly essentially hidden.

#### 4. Conclusion

To sum up, this review has undertaken the examination of Figdor's positive and negative cases for Literalism, i.e. the view that psychological predicates are used meaningfully, literally and univocally across the ordinary domain of humans and the higher animals and the unexpected domain of insects, plants, unicellular organisms and cells themselves. The positive case takes the form of an inference to the best explanation, for Literalism provides the simplest explanation of the quantitative and qualitative similarity between human behaviour and that of the living things in the unexpected domain. The negative case amounts to a rebuttal of the alternatives, which question the meaningfulness (the Nonsense view), literalness (the

Metaphor view) or univocity (the Technical view) of psychological ascriptions beyond the ordinary domain.

As claimed here, Figdor’s positive case for Literalism enjoys limited success, for the argument from quantitative models grounds the ascription of particular cognitive processes beyond the ordinary domain, but only because the general cognitive status of the living things in the unexpected domain is already assumed. But as this is an assumption that has not been persuasively discharged by additional qualitative considerations about the behavioural similarity between the ordinary and unexpected domains, then the crucial question as to whether living things in the unexpected domain belong in the category of the cognitive is begged.

On the other hand, Figdor’s negative case for Literalism is incomplete, for not all alternatives to it have been disposed of. As construed by Figdor, Literalism entails a commitment to essentialism, according to which membership of the category of the cognitive requires satisfaction of a fixed set of necessary and sufficient conditions. This is in opposition to the No-Core view, according to which membership of the category of the cognitive requires satisfaction of some feature or other from an open-ended pool, though not necessarily all or the same feature(s). As the latter fits intuitions to the effect that humans (closely followed by the higher animals) are typical members of the category of the cognitive, without denying meaningful, literal and univocal psychological ascriptions in the unexpected domain, it is a genuine alternative to Figdor’s Literalism, yet one that has not been ruled out. As a result, Literalism has not been shown to outdo all the alternatives.

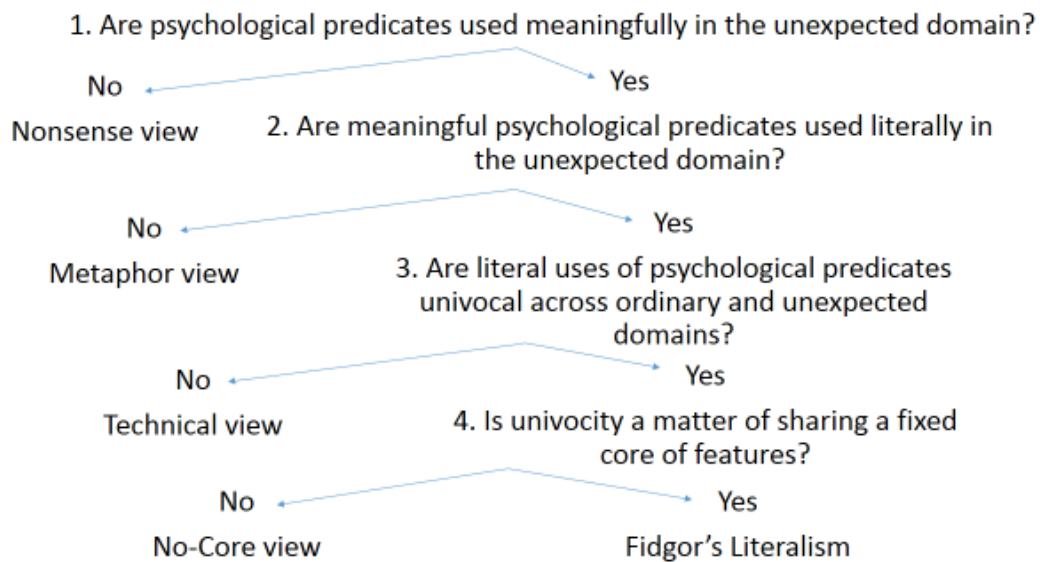


Diagram 2: Expanded map of semantic options

This is captured in diagram 2, which is an expansion of diagram 1. For, once the meaningfulness, literalness and univocity of psychological ascriptions is conceded, a further divide opens up, depending on the answer to the following question: “Is univocity a matter of sharing a fixed core of features?” A positive answer leads to Figdor’s own Literalism, whereas a negative answer is the No-Core view presented here. Hence, if Figdor wishes to defend

Literalism as the best semantic option in play, the No-Core view must also be shown to fall short, especially in view of the fact that it helps make sense of the linguistic behaviour of scientists when reporting the results of their research into the behaviour of insects, bacteria, plants and neurons.

## References

- A. García Rodríguez (2018), "Direct perceptual access to other minds", *International journal of philosophical studies*, vol. 28/1, pp. 24-39.
- L. Gruen (2017), "Empathy in mind", in Kristin Andrews & Jacob Beck (eds.) *The Routledge handbook of philosophy of animal minds*, Routledge, pp. 485-490.
- J. C. Havstad (2018), "Messy chemical kinds", *The British journal for the philosophy of science*, vol. 69/3, pp. 719-743.
- J. S. Mill (2009), *An examination of Sir William Hamilton's philosophy*, Routledge. First published, 1865.
- B. Russell (1948), *Human knowledge: its scope and limits*, Allen and Unwin.
- M. Scheler (2008), *The nature of sympathy*, New Brunswick & London, Transaction Publishers. First German edition, 1923. Translation by Peter Heath.
- S. Spaulding (2015), "On direct social perception", *Consciousness and cognition*, vol. 36, pp. 472-482.
- E. Stein (1989), *On the problem of empathy*, third revised edition, Washington DC, ICS Publications. First German edition, 1917. Translation by Waltraut Stein.