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On the Ontological Status of Propositional Attitudes[†]

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Abstract

The main conclusion of this article is that propositional attitudes are physical brain processes that pertain to language. Hence, propositional attitudes cannot be direct manifestations of our mental states, neither direct representations; instead they must be understood as second-order representations. Thus, propositional attitudes cannot serve for explaining our basic mental activity. Otherwise, propositional attitudes must be understood as language shortcuts used for referring to basic mental states, events or processes.

Keywords: propositional attitudes, language, epistemological models, abstractions, physicalism, eliminativism.

Resumen

La conclusión principal de este artículo es que las actitudes proposicionales son procesos físicos del cerebro que pertenecen al lenguaje. Por lo tanto, no pueden ser manifestaciones directas de nuestros estados mentales, ni pueden ser representaciones directas, sino que deben ser entendidas como representaciones de segundo orden. En efecto, las actitudes proposicionales no sirven para explicar nuestra actividad mental básica. Por otra parte, deberán entenderse como atajos (o accesos directos) del lenguaje usados para referirse a estados mentales, eventos o procesos.

Palabras clave: actitudes proposicionales, lenguaje, modelos epistemológicos, abstracciones, fisicalismo, eliminativismo.

1. Introduction

The present article attempts to argue that a propositional attitude (PA), such as *to hope*, *to believe*, *to expect*, *to think* etc., cannot represent a basic mental state. Both, eliminativism and revisionism will be endorsed. In other words, the traditional notion of PAs will be presented as untenable and a new possible ontological status for PAs

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will be explored. This ontology will be reached through two argumentation-lines which show that PAs cannot be basic mental states. I will call these argumentation-lines *Bottom-up Argument* and *Top-down Argument*. These will involve the following premises:

Top-down Argument:

(1t) Abstract objects, as any other thing, have a physical ontological status.

(2t) This ontological status corresponds to brain processes or patterns.

(3t) Objects that can only be realized as brain patterns can be understood as imaginary.

(4t) Imaginary objects can be constituted by language or language-like brain processes.

(5t) Symbols are abstract-imaginary objects that represent or refer to other things.

(6t) Language can develop truth-valued symbolic representations of other mental states.

(7t) PAs are truth-valued representations so they are not basic mental states.

Bottom-up Argument:

(1b) Objects can elicit representations (or reproductions) in the brain.

(2b) Implicit (non-conscious) mental states can elicit representations as external objects.

(3b) Basic explicit mental states are the result of these elicitations.

(4b) Basic representations can elicit indirect or second-order representations.

(5b) Language is a way for constituting second-order representations.

(6b) PAs are language representations of explicit mental estates.

(7b) PAs cannot be basic mental estates because they are second-order representations.

In the rest of this article I will focus on arguments that can support these argumentation-lines. In section 2 I will argue that there is neither epistemological nor ontological basis for assuming that any kind of abstract object has a special ontological status. This will lead to the conclusion that the *Top-down* argumentation-line shows that any truth-valued proposition can be understood as a basic mental state, including PAs. In section 3 I will argue that, as we generate perceptual models of objects that are not objects themselves, then any statement about those objects is a second-order representation. This will show that the *Bottom-up* argumentation-line allows us to conclude that a commonsense notion of PAs as basic mental states is not accurate, because PAs are second-order representations of other more basic mental

states. Finally, I will conclude that both *Top-down* and *Bottom-up* argumentation-lines are consistently intertwined, so taken together they will lead to a radical revision of the concept of PAs.

2. Abstractions are not Special

2.1 A Case for Imaginism

I will start this section with the premise that anything we can interact with must have a physical ontological status. This is a radical notion of physicalism, but it can be defended from many perspectives. Here I will take the *causal closure of physics* (CCP) argument (Papineau, 2002; 2009). This argument proposes that regarding the actual state of physical sciences, we can assume that all physical effects have physical causes. CCP does not directly reject the possibility of other types of existence (such as Meinongnian absistence, or the existence of purely abstract entities). However, it states that an entity, process, or event has to be physical in order to produce physical effects. Therefore, if abstract objects can be caused (elicited) by physical objects, then abstract objects must be physical. Conversely, if abstract objects can produce an effect in any physical object, then abstract objects must be physical.

Nonetheless, some perspectives deny the existence of abstract objects but still hold that physicalism cannot explain the problem. Some fictionalist perspectives emphasize the idea that some abstract objects (such as infinity) cannot be brain-produced, because the brain is qualitatively different (i.e. discrete) from those objects (Balaguer, 2011). But this is highly problematic, because it would imply that fictions somehow can be subject of mind-representation. If this is the case, due to CCP, fictions must be physical in order to be represented by the brain. Balaguer (1998) gives an answer to this complication by arguing that common-language propositions and scientific formulations use abstract objects such as numbers or propositions to represent a nominalist content. However, contra Balaguer, the non-nominalist structure portraying this nominalist content must be physical, otherwise it could not be able to give any sense to its content, neither to reproduce it through conventional use such as language allows for the case of proposition.

Therefore, abstract objects and propositions depend on brains producing them, brains that act according to social coordination and convention to establish similar common referents. This results in the creation of fictional objects that are defined in a way that allows them to establish strict relationships (i.e. syntax). These fictional objects have a physical ontological status as well, namely: they are brain processes. This is a common process to most intellectual activities, including art and the elaboration of scientific models, and it simply consists of the creation of mental (brain) objects that can allow us to "feign" they exist brain-independently and use them to think of complex concepts and world-events (Bunge, 2006). So we can understand a proposition as a metaphor, figurative speech, or simply as a second-order representation (SOR). However, these SORs must exist somehow, given that they are produced by first-order representations (FOR); where a FOR can be simply understood as a reproduction of a perceived object (internal or external).

Thus, for instance, just as we would not say that the word "tree" does not exist, we would not say the number "3" does not exist. However, this does not mean that the word "tree" has a special ontological status in the abstract world of plants names. In the same way, this does not mean that the number 3 has a special status in the world of numbers. Still, someone could reply that the word "tree" is referring to something (e.g., to some kind of plant), while the number "3" is referring exclusively to 3, so we should assume that something like 3 exists. But we could reply that the number "3" is not necessarily referring to something, and if it is referring to 3, then it is still possible that 3 is something physical (e.g., a specific occurrence of a concept of numerosity in a particular brain). Similarly, the word "there", if stated alone and without context, refers to nothing in particular, with the exception of *there*, understood (for instance) as the concept of something being in a particular time and place. However, we wouldn't say that the concept *there* has a special ontological status in the world of "thereness", and at the same time we would not say that the word "there" does not exist.

Therefore, the best way out of this conundrum between existence and non-existence, is accepting that names of things have a particular ontological status that is independent of the things they name, but this is still a physical ontological status. The only difference is that names are actual in several brains, every time with a different form, even if we regard them conventionally as the same. The same goes for any abstract object that can be used in a language-like manner, for example in a specific syntax. So, if we state "hope", this is not a propositional attitude, it is just the statement of a word. Otherwise, if we state "I am hopeful", this takes the character of a PA, which is not the state of hope (e.g.: expecting a positive outcome of an event). The basic state that can be characterized as hope is a complex mixture of affection, cognition and sensorial integration within a context. Thus, its propositionalized form (such as "I am hopeful") can be regarded as a SOR which is realized thanks to a specific syntax (i.e. the relation between "I", "am", and "hopeful" in English). Therefore, a PA is a second-order representation of a more basic mind-state, event or process.

This last type of FORs and SORs are of a similar kind, both rely only on internal processes (even if these are constituted by past experiences that were produced by external stimuli). I will call these sorts of objects imaginary objects. These representations can be understood as a type of SOR, and they can be understood as having a physical ontological status that corresponds to brain patterns that were elaborated in order to refer to or portray other internal states or processes, including representations (reproductions or presentations) of external objects. Thus, from now on, I will understand the position that considers abstract objects as a case of human brain-produced objects as imaginism.

This perspective will be considered the basic grounding for the first three assumption of the *Top-down argument*. That is, CPC allows us to understand that abstractions are physical objects; even if we want to distinguish abstract objects from concrete objects, the most we can say is that abstract objects are brain produced and concrete objects might not be. This will be the support for assumption (1t). Also this supports assumption (2t) under the consideration that every language or language-like process that can elaborate abstractions such as PAs will be a brain process,

social convention and language propositions are ultimately possible because they are processed by brains (or parts of the brain). Finally, as the physical nature of these objects corresponds to internal brain processes (in the sense that they are produced by stimuli originated in mind and mostly within consciousness) they can be understood as imaginary, thus supporting assumption (3t).

2.2. Symbols and Truth

I will regard imaginary objects as potentially symbolic. I will understand the symbolic use of an object in a broad way, namely as any object that is internally (mentally/consciously) developed and used to stand for other different thing. It might be argued that an external symbolic object, such as a coin, still counts as a symbol. However, the coin itself is just a token, the symbol is the brain process that is learned when recognizing an object of such and such characteristics (i.e. a coin) as having a specific monetary value. This is particularly relevant, because this distinction allows us to argue in favour of a physicalist and reductionist interpretation of deflationism (or minimalism). This will permit us to understand propositions made from SORs, such as PAs, as truth-valued, fictitious and physical at the same time.

Approaches to PAs derived from fictionalism, such as semantic fictionalism (Balaguer, 1998), regard propositions as referring emptily, so as ultimately false (Balaguer, 1998). Thus, arguing in favour of the falsity of any abstract discourse brings out the problem of comparing truth-valued statements where one statement is false and the other true. For instance, take these two sentences:

(1) She hopes to be happy.

(2) She hopes to be sad.

Here the truth of (1) implies the falsity of (2) and vice-versa. In other words, if the person referred by (1) hopes differently (i.e. to be sad), we would understand the sentence as false, so we could say: “That (1) is false”. But here the fact is independent of the truth of sentence (2), so we can only speak of (1) or (2) as being false and true respectively and independently. However, we can only say that our representation of the fact is correct or not; and this is a matter of degrees: the person may hope to be indifferent or just mildly content. Thus, only SORs such as (1) or (2) can be subject to truth-evaluation; but the facts they might be related to cannot.

Differently, these propositions can be understood as truth-valued in a particular conventional use where we simulate or feign that abstract objects exist (Bunge, 2006; Yablo, 2002), namely: according to social use of language or the established use of a set of rules that posit strict definitions and relationships (e.g.: logic), or very fuzzy definitional rules (e.g.: literature). However, this is still slightly problematic, because this notion holds the idea that truth-value implies reference to real objects. We confront then the requirement of a truth that is evaluated in light of world states, which implies that the truths spoken about fictional objects that only refer to fictional

objects would be feigned truths. And this could allow Platonism to enter through the back door (see Torreti, 1981, regarding Bunge's fictionism), unless we take the option of going back to semantic fictionalism.

Considering this, I will take a different option. I will accept a minimalist approach towards truth. Here, truth-valued statements are taken as true or false without any referential condition to a world-state (Horwich, 2004). Slightly extending the deflationist argument, truth is something that can be attributed only to language or language-like propositions, but not to facts (events or processes in the world). This notion fits with PAs understood as abstract objects that pertain to language. Considering this, the existence or inexistence of an object is not something directly related to the truthfulness of a proposition. Let us consider other pair of sentences:

(3) I think Don Quixote lives in Baker Street.

(4) I think Don Quixote had a horse named Rocinante.

In this case we would say that proposition (3) is false and proposition (4) is true. However, Kripke (2013) has argued that we have another option; that is understanding (4) as false as well, because Don Quixote has never existed. This would be in line with notions that regard abstract objects as fictional in the sense that the whole abstract discourse is false, such as *semantic fictionalism*.

In my perspective, Kripke (2013) has considered a better option which he has disregarded after initial consideration. This perspective regards (3) as false and (4) as true iff we can develop an ontology of fictional objects. As I have argued in the previous sub-section, that ontology is there, and it consists of the brain processes that constitute those fictions we refer to. In this sense, we regard (3) as false, because we understand that Don Quixote is a fictional character represented by my imagination due to the stimuli produced by the book written by Cervantes I have read, so he cannot live in Baker street. However, we understand (4) as true because in that same imaginary representation of Don Quixote we know that other imaginary objects (if related) can establish truth-valued relationships; in this sense it is true that Don Quixote's horse is named Rocinante in Cervantes' book. I think that this would allow us to accept fictionism a-la Bunge (2006), where the ontological status of abstractions is transferred to minds (i.e. to specific brain processes), but at the same time allows to escape Platonism in a more consistent way.

For this reason we are able to build other imaginary objects and establish truthful relations among them. For instance, if we were to build a story where Don Quixote were a detective living in Baker Street, we would state (3) truthfully as long as we refer to our story (to the imaginary objects we have built) and not the actual Baker Street. That is why stating: "Sherlock Holmes lived in Baker Street" can be true or false depending on the reference. And in this sense, the referred-to Baker Street, be it the actual or the imaginary one, will be always a mental model. This model is developed through experience, where we can experience walking through the actual Baker Street and keeping that memory, or know it from history books. In a similar way we can imaginarily model Baker Street from a series of novels, such as we can model Don Quixote or Sherlock Holmes. The only difference, is that we can compare

the externally produced models (representations) with other externally produced models and find degrees of correctness in relation to a fact (e.g. comparing a travel book description of Baker Street with the actual Baker Street). However, imaginary objects depend purely on internally produced objects, including other imaginary objects.

So, while our directly held perceptual experience, or the basis of our scientific theories can be evaluated in degrees of correctness, the propositions we make about them have absolute values (they can be true or false). In other words, a model can have wrong elements, but we discard it only when so many of these elements are inaccurate that the whole model becomes inaccurate. In this case, speaking of the falsity of the model is possible, where a statement such as: "this model is false", becomes true. But the facts the model is based on did not contribute to the truthfulness of the previous statement, it was our re-evaluation of the model that made it truth. Facts are directly related to the model, but indirectly related to propositions.

Therefore, if PAs are symbols developed in language as SORs of other more basic mental states that present or re-present implicit mind states and direct experience, then they can count as imaginary objects that can have truth-value. For this reason we can use expressions such as (3) and (4) to refer to our own dispositions towards something. Here, the verb *to think* is a SOR of my considerations about Don Quixote and their relationships with my past experience reading the book. And for this reason it seems so evident that we can replace *think* for *believe* and keep basically the same sentence meaning. Hence, language can produce imaginary objects even about other imaginary objects, thus supporting assumption (4t). And we have observed that this can be used to create symbols that can refer to internal representations, including my current mental states; so assumption (5t) is valid. Finally we have seen that assumption (6t) is supported by the fact that language can be used to build or to establish relationships between imaginary (abstract) objects that can be truth-evaluated. So, we are in a good position to understand PAs as imaginary and symbolic internally produced objects that can have truth-value, but that cannot directly represent a fact.

3. Propositions are not Basic

3.1. From Source to Mind

In the previous section I have assumed that there is a distinction between FORs and SORs and that both are different kinds of brain processes (even though they might be different only regarding their complexity). Now, let us suspend this assumption and consider the argument the other way round. This is what I have called the *Bottom-up* argument. Here, the fundamental assumption is that any object can induce changes on the brain when interacting (directly or indirectly) with it. The type of changes that concern us are related (directly or indirectly) to conscious states of mind, because we need that basis for using propositions. Considering this, the concept of representation has been criticized as inaccurate, because it gives the impression that conscious experience is being "sub-experienced" by some agent, leading to the infinite regress associated to any homuncular view (Pappienau, 2013).

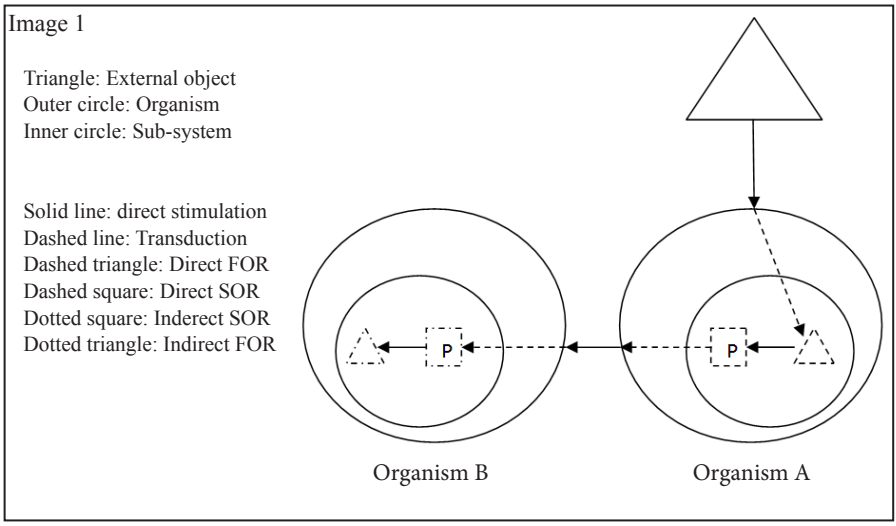
I agree with this criticism, but I will continue using the concept of representation or (re)presentation, considering that it is not portraying experience as presented to any agent. Otherwise I will understand this term as referring to the re-presentation of sensorial stimuli in a cohered manner. This simply means that conscious experience is a multimodal experience, including top-down and bottom-up neural feedbacks. In other words, multifarious stimuli that are received by a diversity of organs are filtered and integrated in a cohered image that we understand as experiencing (Damasio, 1999). I will consider that these (re)presentations or cohered images can be understood as dynamic models we generate from our environment. For this reason, when we refer to some object external to conscious experience, we always refer to this object in an indirect manner, because the direct reference is towards the model we have generated from that object's stimulation. In other words, we have three options:

(i) We can speak about the model of an external object, so we directly refer to this model and through this direct reference we can indirectly refer to the actual object (if this object exists).

(ii) We can speak of memories of an object (if they are episodic, semantic, modal, amodal or multimodal does not matter), which can be considered models from past experiences; so, again, we refer to the actual object (if it still exists) indirectly.

(iii) We can speak of representations (in the SOR sense) of an object that has been developed through other representations or models (e.g.: history books, science class or documentaries); also in this way we indirectly refer to the actual object through its models (if history books, science class and documentaries have not lied to us).

Nevertheless, if these experiences of reality are in some sense images or models of the objects they are related to, then why does the previously proposed imaginistic perspective does not apply to them? In a certain sense it might apply. Let us call this notion *broad-imagism*. However, accepting this would commit us to a deep scepticism, so reducing propositions to physical processes would be an extremely hard task. Otherwise, we can call *restricted-imaginism* to the perspective which comprehends imaginary objects only as those that are restrictedly internally caused. In this sense, the objects we can speak of in (i), (ii) and (iii) cannot be imaginary objects in this restricted sense, because their representations (FORs) are externally caused. These objects might be called images (including the Humean sense of images), but they cannot be considered strictly imaginary. Hence, we need three elements to generate these sorts of images: an object that can be a source of stimulation, an organism that can be stimulated, and a sub-system inside the organism that can integrate multiple sources of stimulation. In this case we can say that what comprises that sub-system are conscious brain processes. And I will consider as imaginary objects (in the restricted sense) all those objects that are produced within this sub-system.



Language and language-like objects can be part of these processes and thus constitute imaginary objects, such as propositions. Image 1 shows a very simple diagram to illustrate this. Here, the right hand organism receives a direct stimulus (solid line) from an object (triangle). Next, the stimulus is transduced (dashed line) into an internal sub-system that arranges a coherent image of the object as an internal process (or group of processes). This internal process can directly stimulate the very sub-system that holds it. This stimulus (solid line within inner circle) can produce another internal object (dashed square) that feeds back into the first one (second solid line within the inner circle). In this case, we can understand this internal new object as a proposition (P) about the image (dashed triangle) that is produced by the object (triangle). This proposition can be communicated through language to another organism, where the language emission is transduced into a similar (not identical) proposition (dotted square) that can be understood because it is matched or related with previous knowledge, experience, memory, language use and/or other internal objects/representations (dotted triangle).

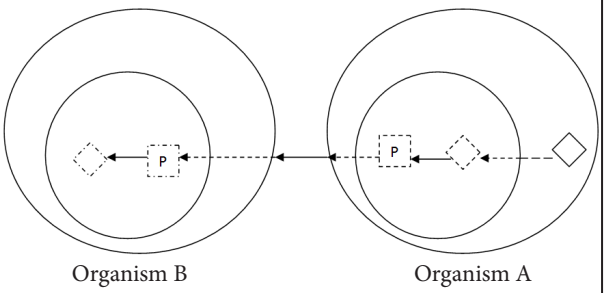
Although an oversimplification, this scheme serves to show that SORs are nothing but FORs produced within the sub-system. For instance, if a speaker hears a novel word, she will not be able to associate (or recall, etc.) this sound pattern to anything, so no proposition would be possible. If we can recognize propositions as such, this is because we know how to use their imaginary components; that is we know how to relate objects such as words that represent rules and others that refer to things (they elicit the recalling of images, a specific emotion, etc.). Considering this, internal implicit (non-conscious) processes can elicit FORs as well. Importantly, here I am talking about inner bodily states such as propioception, equilibrium, or avoidance/attraction mechanisms that can generate stimuli that are later cohered within consciousness in a more integrated experience (see: Damasio, 1999, 2010,

for an extended argument on this topic). Naturally, emotions and feelings cannot be considered non-conscious in this sense, but we should regard them as parts of this cohered experience as well.

Image 1

Diamond: Internal object
Outer circle: Organism
Inner circle: Sub-system

Solid line: direct stimulation
Dashed line: Transduction
Dashed diamond: Direct FOR
Dashed square: Direct SOR
Dotted square: Inderect SOR
Dotted diamond: Indirect FOR



With this in mind, the prospect for PAs as basic mental states seems dim. Image 2 shows how one of these internal objects can directly produce a representation within the sub-system. As basic mental states which represent our dispositions towards objects, events or ourselves (attitudes) are composed by several of these internal FORs, sometimes including external FORs, we cannot speak of PAs as being directly produced by an external stimulus. In other words, PAs are SORs produced by these basic mental dispositions (attitudes); so propositions about attitudes are abstractions (usually created through language) of our basic mental dispositions. Thus, we can understand as a non-basic, or second-order, mental state anything that is produced within the sphere of conscious-aware events/processes. Therefore, things like metacognition, metarepresentations, abstract thought, propositional language, amongst others, cannot be considered basic.

Thus, we have seen that events in the world (facts) can stimulate an organism which is provided by a brain with a "conscious sub-system" and elicit activity intended to model them. This secures assumption (1b), and it also shows us that internal processes can elicit models (representations, images, etc.) of ourselves in the same manner; then assumption (2b) is supported as well. And from this we can conclude (3b), namely that basic mental states are elicited by this internal-to-the-organism but external-to-explicit-experience events or objects. This implies that PAs are SORs, given that they represent in language the explicit images we hold of ourselves.

3.2. Language and Linearity

Although the last three assumptions of the *Bottom-up Argument* seem to be addressed and supported by the last sub-section as well, I want to address directly the problem of PAs as language objects. First, because there is an evident way to

question the previously discussed ways of eliciting FORs and SORs. A language emission through sound (speech) or light (writing) will directly elicit an image: how can this be a FOR and a SOR at the same time? The most straightforward answer is that the image of that emission is not a SOR, it is a FOR. But, as we discussed before, the emission of an unknown word will elicit just a FOR in the listener's consciousness-sub-system. In fact, any language emission will elicit a FOR. But this is not contradictory with the fact that when that a FOR elicits other processes (conceptual memory, visual images, etc.) it becomes a SOR. And this is because these processes are not purely feedforward, there is a feedback between the image conformed by the language emission itself and the images that image elicits. This allows us to recognize this image as representing something, otherwise it would be a simple sound or shape-pattern.

One very important feature of this process that might not be clear by the previously presented schemes is that a language emission can be associated to or generated from multiple internal sources. However, the emission itself (be it auditory, visual, or audiovisual) must be related linearly with other emissions. And while this gives to language the advantage of allowing us to communicate and think in this linear way, which is very suitable for some types abstractions, it deprives it from the possibility of wholly representing our mental states. As our most basic mental states are usually not linearly organized, other mental processes such as language must take advantage of symbolic representations to comprise them in a new image. Importantly, these images (as images in general) do not have any "content" in the sense of integrating in themselves the referred or represented thing. What we call content is simply the elicitation of other images (patterns) that we might have in our current perceptual experience, memory, or others of the like that a language-pattern might produce. Hence, basic mental states that constitute FORs can elicit SORs, and SORs are understood as such while they can establish a consistent feedback with FORs or basic mental states.

And this is why PAs seem so evidently eliminable from our theoretical understanding of mental states. As Churchland (1981) has pointed out, if we are to consider folk-psychology as a theory that uses PAs as its basic abstract objects from which it creates propositions to explain mental states, then this would be an inaccurate theory. I have to disagree with the idea that folk-psychology, and common sense in general, can be understood as theories. I can agree with the notion that some features of our day-to-day mentalizing (the ways we interpret others' mind states) are theory-like. However, the fact that parts of our mentalizing processes such as a theory-of-mind are implicit (see Frith and Frith, 2012, for an extended explanation), indicates that at least the basis of this mentalizing is not propositionally organized. Nevertheless, In my view this does not undermine Churchland's argument; on the contrary it empowers it. Basically, because this indicates that if we try to theorize from our common sense (if we try to turn the abstract objects of our common talk into theoretical objects), such as it has been traditionally done in philosophy, theories thus construed will fail to explain the nature our basic mental states. Even more, they will fail to explain how we comprehend our own and others' mental states, simply because we cannot access implicit mental states introspectively; so we cannot thusly explain what founds the most basic features of our representations of mental states.

Therefore, a common-sense-like theory is not only unsuited for explaining the basic mental states that induce abstractions about them, but it is also unsuited for explaining these very abstraction processes. Hence, the attempt of giving to our whole thought processes the status of ultimately abstract in order to fit PAs as part of these basic states will unavoidably fail. This might explain why Quine (1959) found so many problems with the analyticity of PAs, especially those related to reference and language idiosyncrasy. However, Quine still regarded PAs as a proper metaphor of metal states; thus he considered that speaking of a mouse *fearing* a cat (i.e. "the mouse fears the cat") would be as proper as speaking of an ocean current as clockwise (Quine, 1959). In some sense, there is no problem with this, we can consider that these metaphors might be understood as not wholly explanative but useful for communication. But, are both Quine's exemplar metaphorical uses equally valid? In this sense, a model of currents rotating in some or other way might be associated to images of traditional clocks moving their hands towards their conventional direction without losing the more complex idea of the actual movement of ocean currents. But associating a mouse's mental state to the propositionalized form of our experience of an emotion (i.e. fear) is not so simple.

Here, our deflationist perspective comes in handy. The model we metaphorize might seem more or less accurate, while the proposition can be true or false within the model. In the case of a mouse we recognize certain similar features: it is another mammal, it has a relatively similar brain to our own, etc. So, when we recognize in the mouse a similar behaviour to our own, we can approximate the mouse's mental state to our own. This is consistent with our model, but the accuracy of the metaphor depends on its comparison to a more sophisticated scientific model. This example becomes clearer when we decrease the similarity with the creature we are trying to understand. For instance, thinking of an octopus as having language-like propositional basic mental states seems clearly inaccurate (Churchland, 2001). This is a good example, because when we compare our common-sense model with a more scientifically sophisticated one, we realize that we cannot secure accuracy: octopuses might experience some emotion equivalent to fear, but the fact that octopuses do not create somatotopic maps (representations of their own bodies) would make this experience completely different. A mimosa, for instance, presents an avoidance behaviour when touched, but we would not say (only using a rough metaphor) that this plant dislikes to be touched (i.e. "the mimosa dislikes to be touched"), as if the mimosa were a creature with a brain similar to our own.

Furthermore, as propositions require linearity to work (that is a language), then PAs will turn to be inaccurate representations humans' mental states as well (including my own mental states). And this would lead to the conclusion that PAs must be eliminated from our scientific image of the mind (Churchland, 1981, 2001, 2013). I have to agree with this perspective. However, this takes us back to the question regarding the ontological status of PAs. If PAs do not exist as what traditional philosophy and psychology pretend them to be, then what are they? I have explained this with sufficient detail in the previous sections. What I want to attempt now is to show how PAs physical ontological status is compatible with their elimination from the theoretical comprehension of our mental activity.

First, I want to introduce the concept of *epistemic background* (EB). All the types of representations we have met in the previous sections (models, FORs, SORs) can be considered as having at least some epistemic value. In other words, the models we form from sources of stimulation in the world (external or internal) can be roughly understood as what we can know about that source (object). We can improve these models, or discard and replace them. An eliminative perspective on PAs suggests that we should discard PAs from our theories about mental states and replace them with more accurate models provided by neuroscience, thus improving our knowledge about other sentient and intelligent beings and ourselves (Churchland, 2001). I suggest that although this would be an improvement to our understanding, PAs are sufficient for communicative purposes in a day-to-day basis. In this sense, we should learn (socially) that PAs are just abstract SORs of our mental states, and that our mental states are more rich and complex than what any PA might represent. At the same time, we can keep this information in our EB and continue using PAs mundanelly. Thus, the information in our EB is what we know has more explanative value, so we can relate this EB to something that though it has more communicative efficiency is not accurate.

The character of language requires the use of symbolic objects of an abstract and fictional type, because these objects need to be ordered in linear relations to be communicated. Hence, such as we can say: "the sun rises in the morning." and keep on our EB the idea that the sun actually does not rise but that it is the earth which rotates; we should be able to say: "the mouse fears the cat.", though we keep on our EB the idea that the behaviour of the mouse is the result of multifarious and complex brain processes. And this counts for ourselves as well. Thus I can say: "I believe the sun rises every morning." and by saying that I am aware that the sun is not rising but the earth rotating, that "every" is not literally a logical quantifier because if earth is destroyed it would not be possible for anyone to have the perception of the sun rising, and that "believe" is not a basic mental state, but a language representation of my feeling of knowing a group of facts that have been acquired partly by my trust of science teachers and by my personal observation and study, and that this is part of a brain network (or networks) where memory, affection and cognition interact (broadly speaking).

Therefore, we can understand the ontological status of PAs as brain processes that are internally originated from other brain processes. This implies that any propositional form requires the elaboration of imaginary objects. These imaginary objects are just binding groups of more complex and basic explicit mental processes. As these imaginary objects establish causal relationships with other explicit mental objects, which are in causal relationships with implicit and non-mental objects as well, then they must be physical. Thus, models can integrate implicit and explicit processes to establish FORs, so assumption (4b) is valid. Next, these models can integrate SORs as "meta-models" or simply as extensions, summaries or shortcuts for the more complex model; this supports assumption (5b). PAs can be understood as some of these shortcuts, so they are language representation of explicit mental states, matching assumption (6b).

Finally, I want to remark that even though PAs are communicatively efficient, they are epistemically inaccurate. Thus, they can be replaced by other representations when we elaborate more complex epistemic models such as neuroscientific theories. This fact shows that PAs cannot be basic mental states, because they are but abstract (imaginary) shortcuts of complex basic mental states that can be replaced by more accurate (though less communicatively efficient) descriptions and explanations.

4. Conclusion

In summary, we have observed the traditionally assigned ontological status of PAs has to be revised and changed. Understanding that: (7t) PAs are truth-valued representations so they are not basic mental states, which is the same as stating: (7b) PAs cannot be basic mental states because they are second-order representations. The only difference between these two conclusions is the path followed to reach them. So, (7t) is obtained by reconsidering the status of abstract objects and demonstrating that they depend on our mental activity, and next showing that these abstract objects such as PAs are a consequence of more basic mental activity. And (7b) is reached by observing how mental objects can be generated and by demonstrating that abstract objects are in fact a form of physical objects. Next, by showing that PAs are a type of brain process that serves to represent (in the SOR sense) more basic activity, they cannot be part of those more basic states. Whether we start from high-order mental process such as abstractions and go from them to the more basic processes that underlie them (Top-down), or we start from the processes that constitute basic mental activity and go from them to high order processes (Bottom-up), we will reach the same conclusion: PAs are not identical to those basic processes and they cannot represent them in their whole complexity.

For this reason I have used the terms process and state interchangeably, because any mental representation is a brain process in itself. Hence, mental states are not discrete and static objects, but dynamic processes that are rapidly and constantly changing. Thus, Russell (1919) was right when he warned us not to consider *propositional verbs* as mental states, because verbs are elements of language that can be propositionalized, and mental states are no such thing. In other words, verbs and propositions are brain activity which is part of a particular set of brain processes: language. And even though language is in part conformed by implicit processes and it can interact with basic mental states, it cannot be conflated with those other processes. The mistake is assuming that instead of *propositional verbs* we can have something such as *propositional attitudes* and that that will properly represent our basic mental activity.

In conclusion, we can understand that *attitudes* are just part of the broad panorama of mental states. Even if we understand attitudes as *dispositions*, this will not be wholly explicative of our mental activity. The most we can get is that attitudes or dispositions are in fact terms that generally embrace the group of words we can build to refer or name our mental activity in a specific moment. In this sense, *propositional attitudes* must be understood as imaginary objects that can be used in language to communicate different types of mental activity or states in an efficient way, but only

within a day-to-day context. Hence, *propositional attitudes* or better: *propositional verbs*, are physical objects that can be characterized as language brain processes that can be elaborated to represent more basic activity, such as other more basic representations. Propositional attitudes do not exist outside language, are not basic mental states, and cannot be used to explain the way our minds work.

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