Two Dogmas of Neo-Empiricism

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Abstract
This article critically examines the contemporary resurgence of empiricism (or “neo-empiricism”) in philosophy, psychology, neuropsychology, and artificial intelligence. This resurgence is an important and positive development. It is the first time that this centuries-old empiricist approach to cognition is precisely formulated in the context of cognitive science and neuroscience. Moreover, neo-empiricists have made several findings that challenge amodal theories of concepts and higher cognition. It is argued, however, that the theoretical foundations of and the empirical evidence for neo-empiricism are not as strong as is usually claimed by its proponents. The empirical evidence for and against neo-empiricism is discussed in detail.

In this article, I critically examine the contemporary resurgence of empiricism (or “neo-empiricism”) in philosophy, psychology, neuropsychology, and artificial intelligence. This resurgence is an important and positive development. It is the first time that this centuries-old empiricist approach to cognition is precisely formulated in the context of cognitive science and neuroscience. Moreover, neo-empiricists have made several findings that challenge amodal theories of concepts and higher cognition.

I argue however that the theoretical foundations of and the empirical evidence for neo-empiricism are not as strong as is usually claimed by its proponents (see also Machery, “Concept Empiricism”). In the first section, I describe the two central dogmas of neo-empiricism. In the second section, I discuss two theoretical issues. In the last section, I consider some empirical evidence for and against neo-empiricism.

1. Neo-Empiricism

1.1. TWO DOGMAS

Despite some disagreements between neo-empiricists, they all endorse the following two theses – the dogmas of neo-empiricism:

(1) The knowledge that is stored in a concept is encoded in several perceptual representational systems.
Conceptual processing involves reenacting some perceptual states and manipulating these perceptual states.

Thesis 1 is about the vehicle or form of our conceptual knowledge, that is, roughly, about how we encode our conceptual knowledge (Prinz 109). In agreement with most psychologists and neuropsychologists of perception, neo-empiricists assume that each perceptual system, as well as our motor system and our emotional system, relies on a distinct specific representational system. Neo-empiricists seem to think that besides being distinct, these representational systems are also rather different from each other. Thesis 1 claims that our conceptual knowledge is encoded in these perceptual, motor, and emotional representational systems. Thus, like Hume (Enquiries 19), neo-empiricists such as Prinz (120–2) and Barsalou (“Perceptual Symbol Systems”) characterize the senses broadly: Senses include proprioception, our emotions, as well as our motor systems. Prinz goes even further: Words in inner speech are thought of as perceptual representations (150).

By contrast, amodal theorists argue that our conceptual knowledge is encoded in a representational system that is distinct from our perceptual representational systems: Besides our perceptual representational systems, we possess a distinct, sui generis representational system, which is used to encode our conceptual knowledge (Barsalou et al., “Grounding Conceptual Knowledge” 85). This distinct representational system is usually thought of as being language-like and as being rather different from the modal representational systems.

To take a simple example, according to neo-empiricists, Marie’s conceptual knowledge about apples consists of the visual, olfactory, tactile, somatosensory, and gustative representations of apples that are stored in her long-term memory. These representations are a subset of the perceptual representations of apples Marie has had in her life (Barsalou, “Perceptual Symbol Systems” 577–8; Barsalou et al., “Grounding Conceptual Knowledge” 85–6). They are encoded in several representational systems: Visual representations are encoded in a visual representational system, auditory representations in an auditory representational system, and so forth. According to amodal theorists, Marie’s conceptual knowledge about apples consists of representations that belong to a distinct representational system. Her concept of apple contains some perceptual (visual, tactile, gustatory . . . ) as well as some non-perceptual information about apples in a single, distinct representational system.

Thesis 1 is inspired by a central tenet of classical empiricism. Hume argued that all our ideas are qualitatively similar to our percepts, although they typically differ from percepts by their intensity (Enquiries section 2; see also Berkeley “Introduction”). Despite this convergence of views with the British empiricists, neo-empiricists do not necessarily endorse the pictorialism of traditional empiricists. Berkeley and Hume thought about perceptual representations, particularly about visual representations, by analogy with
pictures (e.g., Hume, *Enquiries*). On the contrary, for most empiricists, pictures are an inappropriate model for thinking about perceptual states (Barsalou, “Perceptual Symbol Systems” 582; Prinz ch. 6). Nonetheless, in spite of this official credo, it is noteworthy that neo-empiricists often illustrate the mental representations they postulate by means of pictures (e.g., Barsalou, “Perceptual Symbol Systems” 578; Damasio, *Descartes’ Error* 104; Prinz 146).

Thesis 2 concerns the nature of our cognitive processes – categorization, induction, deduction, analogy-making, planning, linguistic comprehension, and so forth: The cognitive processes that underlie our higher cognition involve our senses – at least, some of the processes involved in perceptual information processing. The central insight is the following (Barsalou, “Perceptual Symbol Systems” 586; Prinz 148; Stein). Retrieving a concept from long-term memory during reasoning, categorization (etc.) consists in creating some perceptual representations. For instance, retrieving the concept of dog consists in creating some visual, auditory (etc.) representations of dogs. This process is called “simulation” or “reenactment.” Simulation involves some perceptual brain systems. Reenacted percepts and the products of perceptual imagery, for instance visual images, are assumed to be the same kind of representation (Barsalou et al., “Grounding Conceptual Knowledge” 85). Neo-empiricists propose also that reenacted percepts are not necessarily identical to past actual percepts (e.g., Barsalou, “Perceptual Symbol Systems” 584). For instance, following Hume (*Enquiries* section 2, p. 19), they suggest that we combine reenacted percepts to create new representations (Barsalou, “Abstraction”).

Our cognitive processes consist in manipulating these reenacted percepts (e.g., Barsalou, “Perceptual Symbol Systems” 578). This idea is well illustrated by how the psychologist Lawrence Barsalou, one of the leading neo-empiricists, describes the process of verifying whether some object has a given part, for example whether lions have a mane. We produce a visual representation of a lion and another of a mane and we match these two representations. If both representations match, we decide that lions have a mane (Solomon and Barsalou, “Representing Properties Locally” 135–6). Thesis 2 can be seen as a modern development of Berkeley’s insight that reasoning consists in manipulating mental states that are similar to percepts (Berkeley “Introduction,” paras 12–13, pp. 13–14).

Noticeably, most neo-empiricists do not endorse Hume’s associationism. Hume proposed that processing relies on three laws: resemblance, contiguity, and causation (Hume, *Enquiries*, section 3). By contrast, neo-empiricists are usually committed to computational theories of our cognitive processes. Nonetheless, association by contiguity plays a significant role in some neo-empiricist accounts. For instance, Barsalou argues that we store together and we retrieve simultaneously percepts that are experienced simultaneously or successively (e.g., Barsalou et al., “Grounding Conceptual Knowledge” 85; Barsalou, “Continuity”). I retrieve simultaneously the auditory percept of Fido’s barking and the visual percept of Fido’s running because I have
often experienced together these two percepts, which have been, as a result, associated in memory.

Finally, besides rejecting pictorialism and associationism, neo-empiricists differ from traditional empiricists on two counts. Traditionally, empiricists have assumed that mental representations, which they thought of as mental images, refer by means of similarity (e.g., Russell). Roughly, a mental image refers to the set of objects that are similar to it. There are many well-known problems with this view (e.g., Prinz ch. 2). Similarity is an unconstrained notion: Any two things are similar in some respect (Goodman). Similarity, but not reference, is symmetric. And, prima facie, conscious mental images do not refer by means of similarity: While wolves are similar to my mental image of dogs, my mental image of dogs is not about wolves. A similarity-based theory of reference is a burden for empiricist theories of mental states. However, Prinz has cogently argued that empiricist theories are not necessarily committed to a similarity-based theory of reference (ch. 9). On the contrary, they can be combined with most contemporary theories of reference, including Fodor’s covariance theory (see Theory of Content) and Millikan’s teleological theory (see Language). Perceptual simulations of apples may refer to apples, not because they are similar to apples, but because they covary with apples.

Furthermore, neo-empiricists are not necessarily committed to an important tenet of traditional empiricism, namely, anti-nativism (Barsalou, “Perceptual Symbol Systems”; Prinz, ch. 8). Perceptual representations can be innate. For instance, evidence suggests that some perceptual representations of snake-like stimuli are innate (Mineka et al.). Thus, neo-empiricists could endorse some degree of representational nativism, roughly, the idea that some representations are innate.

1.2. DISCUSSION

Neo-empiricists claim that our conceptual knowledge is encoded in perceptual representations. Despite its apparent clarity, the notion of perceptual representation needs further explanation. Contrary to traditional empiricists, neo-empiricists cannot rely on introspection to illustrate this notion. For they propose that we should not think of perceptual representations on the model of our conscious perceptual experiences (Barsalou, “Perceptual Symbol Systems” 582).

There are two possible strategies to spell out the notion of perceptual representation. The first strategy has been endorsed by Barsalou. He proposes that amodal representations form linguistic systems, while modal representations are analogic (578). This strategy is not without problems. Analogic representations are usually thought to be such that some properties of their vehicles covary with what is represented. Maps and mercury thermometers are good examples. Evidence shows that there are some analogic representations in the brain – retinocentric maps, for instance. However,
there is no evidence that analogic representations, so understood, are pervasive in the brain. Moreover, there are additional reasons to resist Barsalou’s proposal. Many perceptual representations could in fact be linguistic (Pylyshyn, *Seeing and Visualizing*). And, as we shall see in Section 3, there is evidence that some representations are analogic and amodal – in the sense that they do not belong to any perceptual system. It is thus inadequate to contrast amodal and perceptual representations by means of the notion of analogic representations.

As an alternative strategy, neo-empiricists could propose that perceptual representations are whatever psychologists of perception say perception involves (Prinz 113). If psychologists of perception propose that perceptual representations are similar to traditional amodal symbols, for instance if perceptual representations form linguistic representational systems (Pylyshyn, *Seeing and Visualizing*), neo-empiricism would propose that our conceptual knowledge is stored in several linguistic systems. In this case, the distinction between neo-empiricism and the amodal approach would be rather thin.

Finally, it is useful to distinguish between *wide-scope* and *narrow-scope* neo-empiricism. Wide-scope neo-empiricism claims that the two dogmas of neo-empiricism characterize all our conceptual knowledge and our conceptual processes (Barsalou, “Perceptual Symbol Systems”). Narrow-scope neo-empiricism claims instead that these two dogmas characterize merely a subset of our conceptual knowledge and of our conceptual processes (Goldstone and Barsalou). A similar distinction applies to amodal theories. While some amodal theorists may claim that our higher cognitive processes involve exclusively some knowledge stored in a distinct, amodal representational system (exclusive amodal theories), most amodal theorists assume in fact that besides our amodal representations, we also store in long-term memory some perceptual states and that we use these perceptual states in our higher cognition (e.g., Fodor, *Language of Thought*; Simon; for discussion, see Machery, “Concept Empiricism”). Interestingly, this second kind of amodal theory may be compatible with narrow-scope neo-empiricism. This suggests that instead of a strict distinction, there is in fact a continuum of positions between wide-scope neo-empiricism and an exclusive amodal theory.

### 1.3. Major Strengths

Like traditional empiricism, neo-empiricism provides a seductive (though insufficiently detailed) account of *concept acquisition*. In brief, amodal theories of concepts typically assume that learning a concept consists in forming a complex concept out of primitive concepts. For instance, learning the concept BACHELOR consists in forming the complex concept UNMARRIED ADULT MALE. The concept MALE may itself be compounded out of other concepts. Primitive concepts are not learned (Fodor, “Present Status”). Since it is unlikely that all our concepts can be...
produced out of a few primitive concepts, amodal theories of concepts seem at least committed to many non-learned primitive concepts. Neo-empiricist theories of concepts seem to circumvent this problem. For these theories, acquiring a concept consists in selecting a subset of our percepts of the referent of this concept, maybe on the basis of the recurrence of these percepts, and in being able to reenact these percepts. There is thus no need of postulating a large class of primitive concepts, out of which other concepts could be compounded. Instead, concepts are made out of perceptual representations.

Neo-empiricism is also parsimonious. Few deny that we store perceptual states in long-term memory and that mental imagery is a real phenomenon. Wide-scope neo-empiricism proposes that our perceptual representations together with the mechanisms involved in imagery are sufficient to account for our higher cognition.

Finally, Barsalou has recently proposed that the two dogmas of neo-empiricism highlight the continuity between human cognition and other animal species’ cognition (Barsalou, “Continuity”). By contrast, he claims that amodal accounts of our conceptual knowledge typically assume a discontinuity between humans’ and other animal species’ cognition.

2. Theoretical Issues

Barsalou and Prinzhorn recognize that traditional empiricism faced serious theoretical challenges. But they claim that neo-empiricism meets these challenges (e.g., Barsalou, “Perceptual Symbol Systems” 581; Prinzhorn 169–88). In this section, I consider this claim.

2.1. ABSTRACT CONCEPTS

A common objection against empiricism is that it cannot account for abstract concepts. In his sixth Meditation (1642), Descartes argued that some mathematical ideas cannot be images, because we know introspectively that we cannot entertain a visual image of complex mathematical entities such as a chiliogon. Since neo-empiricists do not assume that reenacted perceptual representations are conscious, they could reply that introspection may mislead us in this and similar cases. The gist of Descartes’s objection remains, however. For we have many concepts of entities for which there is, prima facie, no perceptual representation. What are indeed the perceptual representations of democracy, freedom, spin, square roots, and prime numbers?

Neo-empiricists have taken up the challenge (e.g., Barsalou, “Perceptual Symbol Systems”; Barsalou and Wiemer-Hastings; Prinzhorn ch. 7). Focusing on specific abstract concepts, they have argued that entertaining these concepts could consist in reenacting a specific kind of perceptual representation. Their strategy consists in specifying a typical situation where
we would apply the abstract concept at hand and to propose that entertaining this concept consists in simulating this situation. For instance, we typically apply the concept TRUE to an utterance, say “the sky is blue,” when we successfully match the utterance to the world. Thus, neo-empiricists propose that to entertain the concept of truth could consist in simulating a situation where a speaker utters a sentence and a hearer verifies that this sentence matches the situation (Barsalou, “Perceptual Symbol Systems” 601; Prinz 177–8). Simulations corresponding to abstract concepts are assumed to be dynamic, that is, to involve some changes in what is simulated. The simulation corresponding to the concept of truth involves successively a speech act and the verification of its correspondence to a situation by a hearer. Simulations corresponding to abstract concepts are also assumed to recruit introspective states. Prinz argues that such simulations enable us to track and thus to refer to the referents of these abstract concepts.

It is unclear whether this strategy can be applied to all abstract concepts, for instance, to the mathematical concept of a limit. The main problem, however, is that perceptual simulations, including dynamic and introspection-based simulations, are not sufficiently thin-grained to individuate abstract concepts. As a result, such simulations are ill-suited to track the referent of these abstract concepts. For example, the simulation assumed to correspond to the concept of truth could also correspond to the concepts of accuracy, appropriateness, truthfulness, and reliability. Similarly, in most neo-empiricist experiments on abstract concepts, the motor and spatial simulations associated with entertaining abstract concepts (e.g., imagining something vertical or something horizontal) are too thick-grained to individuate the concepts at hand.

2.2. PROPOSITIONS

The capacity of empiricist theories to account for propositional thoughts has often been called into question (e.g., Fodor, Language of Thought 179–84). Barsalou and Prinz have taken up this challenge, since they assume that concepts compose to form propositional thoughts (Barsalou, “Perceptual Symbol Systems” 595–7; “Abstraction” 1178; Prinz). Roughly, the idea is the following. When we represent a simple proposition, such as the proposition that planes have wings, we reenact a perceptual representation of a plane and we bind this reenacted percept to the simulator of wings (see note 2 on Barsalou’s notion of simulator). For instance, Barsalou writes (“Abstraction” 1182): “[the proposition has(AEROPLANE, wings)] would only exist after deliberately binding the wings simulator to the holistic AEROPLANE simulation.”

There are two main issues. First, Barsalou says very little about the notion of binding. Despite intense work in cognitive and neural modeling, it remains unclear how a non-linguistic system could allow for binding between
concepts. This is prima facie inconsistent with Barsalou’s rejection of a linguistic representational system for our conceptual knowledge.

Second, concepts can be combined, or “bound,” in many ways. I could correctly think that planes have wings, but I could also incorrectly think that planes are wings. To account for these different types of combination, Barsalou would have to introduce specific representations, IS or HAVE. When I think that planes are wings, the reenacted representation of planes could be bound to the representation of being and to the simulator for wings. When I think that planes have wings, the reenacted representation of planes could be bound to the representation of having and to the simulator for wings. Now, either these additional representations are amodal or they are themselves perceptual representations. Although Barsalou may be ready to endorse the second alternative, it is unclear to me what perceptual representation could correspond to being.

The problem does not stop here, however. The proposition that planes have wings is different from the proposition that wings have planes. Hence, to express the proposition that planes have wings, it is insufficient to merely bind the perceptual simulation of planes to the simulators of having and of wings. To distinguish between the two ways of binding the representations of planes, wings and having, Barsalou would have to introduce representations of subject and object. Again, it is unclear what perceptual representations correspond to subject and object. This argument suggests that entertaining a proposition might require amodal symbols.

3. Empirical Evidence for Neo-Empiricism

Contrary to its philosophical antecedents, neo-empiricism is not a mere theory of concepts and higher cognition. It also inspires a thriving experimental research program. Barsalou has even argued that while (1) there is very little empirical evidence for amodal theories of concepts, (2) there is a growing body of evidence for neo-empiricism. Hence, if theoretical arguments do not weigh disproportionately in favor of amodal theories of concepts – and Barsalou believes they don’t – we should prefer empiricist theories of concepts to their competitors. Thus, Barsalou et al. write:

Amodal theories have been attractive theoretically because they implement important conceptual functions, such as the type-token distinction, categorical inference, productivity and propositions. Conversely, indirect empirical evidence has accumulated for modality-specific representations in working memory, long-term memory, language and thought. (“Grounding Conceptual Knowledge” 85–6)

In this section, I succinctly question this argument. I argue that there is a substantial body of evidence for the existence of amodal symbols. Moreover, the evidence for neo-empiricism is not fully convincing (for more details, see Machery, “Concept Empiricism”).

3.1. EVIDENCE FOR AMODAL REPRESENTATIONS

As noted above, amodal representations can take two forms – linguistic or analogic. Evidence for any of these two types of amodal representation would be inconsistent with wide-scope neo-empiricism. I describe briefly a large body of behavioral and neuropsychological evidence that humans have in fact amodal, analogic representations of the approximate cardinality of classes of entities (objects, sounds, events).

Adults as well as, to some extent, babies are able to estimate the approximate cardinality of classes of objects and to compare classes according to their cardinality, suggesting that they represent the approximate cardinality of classes (for recent reviews, see Hauser and Spelke; Piazza and Dehaene). Although there are several models of these representations, these models concur in regarding the representations of cardinality as amodal and analogic (Piazza and Dehaene).

This claim is supported by the following evidence. Adults can estimate the cardinality of classes, compare classes according to their cardinality, and add cardinalities in several modalities, including vision and audition. Their performances have similar properties in both modalities. The development of these competences is also similar in both modalities: Children show the same pattern of failures and successes in both modalities. Finally, adults can compare the approximate cardinality of classes across, at least, vision and audition (Barth, Kanwisher, and Spelke). Crucially, performance across modalities is as accurate as within a single modality. The same is true of adults’ capacity to add cardinalities.

Neo-empiricists seem committed to the claim that subjects rely only on perceptual, that is, visual, auditory, tactile (etc.) representations of cardinality. If this were the case, we would not expect similar performances in different modalities, similar developmental patterns, and, most important, equal accuracy of subjects’ performances within modality and across modalities. Instead, these phenomena are strong evidence that subjects abstract amodal representations of the cardinality of perceived classes from the auditory and visual representations of these classes.

Other vertebrates, including pigeons, rats, new-world monkeys (tamarins) and old-world monkeys (macaques), are able to estimate and compare cardinality. Behavioral evidence suggests that cardinality estimation and comparison display the same signature properties across species – including the absence of modality effects (Meck and Church). Neurological evidence suggests tentatively that cardinality representations involve the same neural substrate in humans and macaques – the intraparietal sulcus (Piazza and Dehaene). This provides evidence that cardinality estimation and comparison, together with the representations of the cardinality of classes, might be homologies – phenotypic traits shared in virtue of common descent. If this is the case, amodal representations are phylogenetically ancient and independent of language. Pace Barsalou (Section 1), continuity between human cognition
and other species’ cognition does not require human cognition to be perceptual.

This is evidence for amodal representations in only one domain – number. However, this body of evidence is inconsistent with neo-empiricists’ claim that there is little evidence for amodal representations.

3.2. PROBLEMS WITH THE EVIDENCE FOR NEO-EMPIRICISM

There is, prima facie, a large body of evidence for neo-empiricism (for a recent review, see Barsalou et al., “Multi-modal Simulation”). For the sake of space, I focus on the most striking empirical findings, which come from Barsalou’s lab (Barsalou, “Perceptual Symbol Systems”; Barsalou et al., “Grounding Conceptual Knowledge”; Barsalou et al., “Multi-modal Simulation”).

Barsalou and colleagues’ results are derived from two experimental designs. The first design is called “the feature listing task.” Subjects are asked to list the properties of some type of objects, for example the properties of tables. This task has been commonly used in the psychology of concepts, because it is often thought that people access the information stored in concepts to solve this task. Barsalou and the psychologist Ling-Ling Wu’s two main findings can be put succinctly (Wu; Barsalou, Solomon, and Wu, “Perceptual Simulation”). First, the performance of subjects who have been told to visualize the target objects, for instance tables, while listing the properties of these objects is similar to the performance of subjects that have not received any explicit instruction. Barsalou and colleagues call this phenomenon “instructional equivalence.” Second, subjects list significantly more internal properties, for example, red, for the instances of adjective-noun compounds, such as “half watermelon,” than for the instances of the corresponding nouns, such as “watermelon.” Barsalou and colleagues call this phenomenon “perceptual work.” Consistent with Thesis 2 (Section 1), these two phenomena suggest that subjects are spontaneously visualizing, while accessing concepts.

We should however resist this conclusion. For, pace Barsalou and colleagues, these two findings are accommodated by some standard amodal theories of concepts and higher cognition. Instructional equivalence is accommodated by any theory of mental imagery that assumes that we entertain visual images under a description – that is, a theory according to which when we visualize a table, we entertain a visual representation together with our concept of table (Fodor, Language of Thought). Perceptual work is accommodated by amodal theories of concept combination inspired by the pragmatic requirements of communication (e.g., Costello and Keane; for discussion, see Machery, “Concept Empiricism”). In brief, these theories propose that when we interpret a noun phrase, such as “half watermelon,” we assume that the speaker intends to communicate as much specific information about the extension of the noun phrase as possible. If the
outward aspect of the instances of the noun phrase (“half watermelon”) differs from the outward aspect of the instances of the noun (“watermelon”), outward aspect is a good candidate for such specific information. As a result, subjects are expected to list more internal properties for a noun phrase such as “half watermelon” than for a noun such as “watermelon.”

The second design, which is also commonly used in the psychology of concepts, is called “feature verification.” Subjects see on a computer screen the name of a class of objects, such as “blouse,” followed by the name of a part, such as “sleeve.” They have to decide whether the latter is usually a part of the former. Barsalou and the psychologist Karen Solomon’s main findings are the following (Solomon and Barsalou, “Representing Properties Locally”; “Perceptual Simulation”). When subjects decide successively whether a given part belongs to two types of objects, the second decision is primed only if the part has a similar shape in these two types of objects. To illustrate, after having decided that horses have a mane, subjects are quicker to decide that ponies have a mane than to decide that lions have a mane. Second, the ratio of the volume of the part to the volume of the whole object, for instance, the ratio of the volume of a mane to the volume of a lion, is a predictor of how fast subjects are to decide whether the part belongs to the object. Barsalou and colleagues argue that these findings are evidence for Thesis 2.

We should resist this conclusion. For, as noted in Section 1, many proponents of amodal theories recognize that in some tasks, we do visualize objects and manipulate visual representations. What they insist on is that not all tasks are solved this way. Now, verifying that an object has a given part is precisely the kind of task where amodal theorists expect people to rely on visual imagery. For relying on imagery seems to be a fast and efficient way to solve this task. As a result, Barsalou and colleagues’ findings are not ideally suited to distinguish between neo-empiricism and amodal theories of concepts and higher cognition.

Barsalou and the psychologist Diane Pecher have developed a clever variant of the feature verification task (Pecher, Zeelenberg, and Barsalou, “Verifying Different-Modality Properties”; “Sensorimotor Simulations”). Subjects are presented with names of objects, such as “leaves,” and with names of sounds, colors, and other perceptual properties, for instance, “rustle.” The main finding is that subjects are quicker to decide that leaves rustle, if this decision follows a previous decision involving the same modality, for instance if subjects had to decide whether lions roar, than another modality, for instance if subjects had to decide whether leaves are green. This is a very interesting finding. It may, however, be accommodated by amodal theories of concepts, if concepts of perceptual properties (e.g., GREEN) are located in the brain near the relevant perceptual modality: That is, if concepts of colors are located near the visual system, concepts of sounds are located near the auditory system, and so on. If this is the case, the brain instantiations of visual concepts are likely to overlap with each other, but
not with the brain instantiations of auditory concepts, and so on. Hence, the activation of a visual concept is likely to be primed by the activation of another visual concept, but not by the activation of an auditory concept. Neuropsychological evidence suggests that perceptual concepts are located in precisely this way (e.g., Martin and Chao).

Finally, even if Barsalou’s findings were decisive, we should be cautious in generalizing any conclusion to our whole conceptual system: For many higher cognitive functions, such as reasoning under uncertainty or induction, there is no evidence for or against neo-empiricism.

4. Conclusion

In spite of the criticisms developed in this article, there is little doubt that the recent revival of empiricism in philosophy, psychology, neuropsychology, and artificial intelligence is a positive development. Neo-empiricists’ empirical findings constrain any present and future theory of representation – be it amodal or empiricist. Moreover, proponents of amodal theories cannot take any more for granted that higher cognition involves the manipulation of amodal representations. They are compelled to specify their views in more details and to gather empirical evidence for them.

It remains that neither the theory nor the evidence pulls decisively in favor of neo-empiricism. Despite laudable theoretical proposals, neo-empiricism seems ill-equipped to deal with abstract concepts and propositions. Moreover, despite its interest, the evidence for perceptual representations in higher cognition falls short of being inconsistent with all standard amodal theories of concepts and higher cognition.

I would like to conclude on a speculative note. Elsewhere (Machery, “Concepts”; Doing without Concepts), I have argued that the class of concepts divides into several heterogeneous subclasses, which have little in common. As I put it, concepts are not a natural kind. Thus, it could be that one of these subclasses consists of perceptual representations.8

Notes

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2 See Section 1.2 on how to characterize these perceptual representational systems.

3 Barsalou calls “simulator” our knowledge in long-term memory. At times, he seems to argue that simulators are not representations, but merely mechanisms that underlie the reenactment of perceptual representations when we grasp a concept (“Abstraction” 1180). He speaks however about the content of these simulators; moreover, these simulators can be bound with concurrent perceptual representations into propositions (1182). As such, they are similar to what psychologists call “concepts.”

4 For the sake of the discussion, I assume that the notion of innateness is not bankrupt. See P. Griffiths, “What is Innateness?” The Monist 85.1 (2002): 70–85.

5 Fodor argues that all lexical concepts are primitive, thus innate.

6 Prinz could reply that for such concepts, grasping a concept is to know how to use the corresponding words. This reply would open Pandora’s box, however. Since this strategy could be applied to all lexical concepts, there would be little need for perceptual representations proper.


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8 I would like to thank Peter Machamer and Shaun Nichols for their comments on a previous version of this article.

Works Cited


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