**Against imagination**

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The term ‘imagination’ may seem harmless. We talk about imagination all the time. Nonetheless, I will argue that we should treat it with suspicion. More precisely, I will argue that the explanatory power of the concept of imagination can be fully captured by a scientifically more respectable and more powerful concept, namely, the concept of mental imagery.

1. **How not to explain the mind**

Language is a powerful tool. Without it we would not be who we are. But the power of language has been seriously exaggerated since at least the middle of the 20th century, at least in analytic philosophy. There has been an assumption, often explicit, but almost always at least implicit, that language can tell us how things are. The assumption is that if we want to understand the basic units or building blocks of a certain phenomenon, then all we need to do is to consult our everyday language of this phenomenon. If we study forests, for example, let’s go with the ordinary linguistic categories like lilies, beech trees, and so on.

This approach to philosophizing is the most explicit in mid-20th century ordinary language philosophy, but it has remained with us ever since. The problem is that language did not evolve in order to give a fully accurate representation of the world. It evolved in order to help us communicate about the world. And in order to help us communicate about the world, language only needs to give us words that more or less fit the natural phenomenon in some special circumstances. It does not need to give us words that reliably fit the natural phenomenon exactly (a point that was most elegantly made in Dennett 2005).

Let’s go back to the example of the forest. As it turns out, neither the word ‘lily’ nor the word ‘beech tree’ pick out scientifically respectable categories (Dupré 1981, p. 74, pp. 71-72, respectively). As John Dupré summarizes, “it is far from universally the case that the preanalytic extension of a term of ordinary language corresponds to any recognized biological taxon” (Dupré 1981, p. 73). We can understand each other very well when we talk about lilies or beech trees, but if we want to study biology, these concepts are not very helpful. Concepts like ‘lily’ or ‘beech tree’ are sometimes referred to as folk biological concepts. And folk biology is not all wrong. It makes some (approximately) true claims, which can, in some select circumstances, help us to navigate our biological environment. But we want more than this from a scientific theory. Folk biology is not a scientific theory.

And what is true of folk biology is true of other folk sciences. While the reliance on language seems to be on its way out in some philosophical subdisciplines (for example, in philosophy of biology), it is still very strong in philosophy of mind. The mind is routinely described in terms of concepts from ordinary language without much examination of how accurately these concepts pick out actual mental processes or phenomena. Many philosophers of mind talk about beliefs and desires, for example – terms we are familiar with from ordinary language use. And the assumption is that the basic building blocks of the mind must correspond to the categories these words pick out.

In the light of the failure of such approach in pretty much all domains of biology and as the human mind has evolved just like lilies and beech trees, this is an extremely problematic assumption to make. Propositional attitudes like beliefs and desires are the lilies of the mind. We use words like ‘belief’ and ‘desire’ because it helps us to communicate with each other by picking out a mental phenomenon more or less correctly in some special circumstances. But it does not follow from this that words like ‘belief’ or ‘desire’ happen to miraculously latch onto the actual building blocks of the mind.

This paper is not about the concept of beliefs or the usefulness thereof. It is meant to serve as an example of the problematic nature of folk psychological concepts. So I will not go into the details of the arguments back and forth on this topic (nor will I say anything about whether and how the philosophical conception of belief may be different from the everyday conception of belief). But it has been argued for decades now that beliefs do not have anything reminiscent of ‘natural kind’ status (see especially Stich 1983, 1996, Mallon et al. 2009). For rhetorical reasons, I will run with these arguments as they demonstrate a strategy for questioning the usefulness of folk psychological concepts. But if the reader is fond of beliefs (some are…), they should keep in mind that the main argument in this paper (concerning imagination) does not rely on this classic argument concerning beliefs.

It is important to see that this line of argument against taking beliefs to be the building blocks of the mind does not need to lead to eliminativism or reductivism. A popular way of countering linguistically inspired philosophizing is to urge to get rid of all talk of mental states and refer to brain states only (Churchland 1981, 1988 – also Stich 1983 although Stich changed his mind about this, see Stich 1996). I hope it is clear that it does not follow from the mistrust of concepts like ‘belief’ or ‘desire’ that we should mistrust all non-neural ways of describing the mind. The analogy from the domain of biology would be to stretch the inadequacy of concepts like ‘lily’ or ‘beech tree’ to a mistrust of all concepts except cellular level ones (or maybe chemical or microphysical ones). This is not what biologists do: they identify the biological taxa that pick out biologically explanatory groupings of plants and trees. Just because ‘lily’ does not pick out such a grouping, it does not follow that no concepts of the same level of description does so. In fact, the genus *Erythronium* does delineate an explanatorily very relevant kind that is widely used in plant biology. But the concept of ‘lily’ does not.

Similarly, just because the concept of ‘belief’ may not latch onto a psychologically explanatory phenomenon, this doesn’t mean that there are no psychological concepts that would pick out a psychologically explanatory phenomenon. In fact, from the 1970s, some philosophers of mind and psychologists started to identify the basic building block of the mind in a way that is not linguistically derived. Gareth Evans, for example, urged philosophers to take the basic building blocks of the mind to be ‘information-carrying states’, rather than beliefs or desires (Evans 1982, see also Dretske 1981). But a more influential attempt to replace beliefs, desires and other propositional attitudes was an appeal to the concept of representation.

Beliefs and desires, whatever they are, would count as representations, but representation is a much wider category. Importantly, representation is a technical concept and not an everyday language category. A representation attributes properties to something. And we have a great number of empirically motivated reasons to describe the mind as having representations (see Nanay 2014, forthcoming b for summaries). The general idea here is that whatever explanatory work the concept of belief can do, the concept of representation can do it better. And as we have empirically solid reasons to posit representations (but significantly less solid reasons for positing beliefs), if we want to understand how the mind works, we should understand it in terms of representations (and not in terms of beliefs).

Note that the general strategy here is twofold: treat folk psychology with suspicion, but at the same time look for categories that can do the explanatory work folk psychology can do. Folk psychology, like folk biology is an imperfect and extremely approximate theory. It works some of the time and fails to work some of the time. The hope that fuels not only philosophy of mind, but also psychology and neuroscience, is to find a better theory to describe how the mind works.

1. **Varieties of skepticism about imagination**

I have talked about how the explanatory work of the concept of ‘belief’ could be captured and extended by the concept of ‘representation’. I would like to run a structurally similar argument concerning imagination. Imagination is also an ordinary language concept. Hence, we should not assume that it latches onto a real mental phenomenon. But at the same time, we need to be able to explain why the ordinary language concept of imagination has been used so successfully.

 I will argue that just like the technical concept of representation is preferable to the ordinary language concept of belief, similarly, the technical concept of mental imagery is preferable to the ordinary language concept of imagination. But before I make this argument, I want to set aside some forms of skepticism about imagination that are different from mine.

 One salient challenge for philosophers of imagination is to find some kind of common denominator between the seemingly very different mental phenomena that are referred to by the term ‘imagination’. While many have maintained that “there is some *one thing* that is the phenomenon of Imagining” (O’Shaughnessy 2000, p. 340, my emphasis), finding this ‘one thing’ has been a challenge. Imagining comes in many forms and they seem very different.

Probably the most commonly drawn distinction between different imaginative episodes is between sensory and propositional imagination. Sensory imagination is imagining seeing, hearing, smelling, etc. something. More generally, as Paul Noordhof says, “the distinctive feature of [sensory] imagining is that a condition of its success is to recreate the sensory experience of the thing imagined” (Noordhof 2008, p. 337).Propositional imagination is imagining that such and such is the case. In other words, the former is imagining perceiving x, whereas the latter is imagining that x is F.

But the heterogeneity of imagination does not stop here (Kind 2013). Imagining doing something could be taken to be different both from sensory and from propositional imagination. And the same goes for imagining being someone or being in someone’s situation. Further, imagination even within these broad categories could function very differently – sometimes without any constraints, as in daydreaming and some other times with strict constraints, for example, when we are using our imagination to solve a specific problem (see, e.g., Currie and Ravnescroft 2002).

I want to emphasize that it is not this heterogeneity of imagination that I take to be the reason why we should be suspicious of the very concept of imagination. Let’s go back to the biological analogy. Some biologically explanatory categories, like that of being a mammal, is extremely heterogeneous, but it still has significant explanatorily power and there is also a common denominator between the diverse members of this category. So while imagination is undeniably heterogenous, this itself should not lead to any form of skepticism (see also Kind this volume for much more detailed arguments about this).

A second influential way of downplaying the distinctiveness of imagination is to argue that the difference between belief and imagination is that of degree and not of kind. And given that there is a smooth transition between belief and imagination, we should not posit a separate category of imagination (Schellenberg 2013, Egan 2008). Note that if we do have reason to think that beliefs are not the basic building blocks of the mind, then we have a much more serious source of skepticism here, namely, that if the line between beliefs and imagination is blurry, then imagination is not a basic building block of the mind either.

Finally, the historically most influential form of skepticism about imagination comes from the direction of behaviorism, most pithily summarized by Gilbert Ryle’s dictum that “there is no special Faculty of Imagination” (Ryle 1949, p. 257). Ryle’s attack on the concept of imagination is really a form of the general behavioralist mistrust of mental imagery (Matthews 1969, Shorter 1952, Kleiman 1978). His central analogy is that imagining is like pretending to tie a knot without a piece of rope. While Ryle is often taken to be eliminativist about imagination and he does often talk about reducing imagination talk to pretense talk, the focus of his ire and ridicule is not imagination, but mental imagery. In fact, he has a number of important observations about, for example, the role of expectations in imagination (Ryle 1949, pp. 268-269), but his argument is that if mental imagery is eliminated, there is no reason why it could not just be taken to be a (distinctive) form of pretense.

In some ways, the contrast between Ryle’s account and mine is the most important because I am going to argue for the exact opposite of what Ryle’s claim amounts to. Ryle took imagination to be an actual mental kind (albeit maybe a subcategory of pretense), but he definitely did not take mental imagery to be a mental kind. I will make the converse claim: I take mental imagery, but not imagination, to be an important building block of the mind. But my conception of mental imagery is very different from Ryle’s.

1. **Mental imagery**

I started this chapter with a tirade against blind trust in ordinary language categories. But isn’t mental imagery an ordinary language category as well? I don’t think so. The term was first consistently used in the early days of experimental psychology in the second half of the 19th century and while it has clearly made it to our ordinary language, the way psychologists and neuroscientists use the concept is not as an ordinary language category. Here is a representative definition from a review article on mental imagery in the leading journal *Trends in Cognitive Sciences*: “We use the term ‘mental imagery’ to refer to representations […] of sensory information without a direct external stimulus” (Pearson et al. 2015, p. 590, see also Nanay 2015, 2017, forthcoming a).

 This definition captures the kind of mental imagery that we tend to think of when thinking about mental imagery, for example, the experience we have when closing our eyes and visualizing an apple. That experience is a representation of sensory information without direct external stimulus. But it is also much wider than just the experience of visualizing.

 First, mental imagery, like perception, can happen in all sense modalities. Mental imagery can be visual, but it can also be auditory, olfactory, gustatory and tactile. Second, while visualizing an apple amounts to a voluntary use of mental imagery, there is also involuntary mental imagery, like flashbacks or earworms – annoying tunes that go through our head in spite of the fact that we really don’t want them to. Third, while in the case of visualizing, mental imagery is not accompanied by the feeling of presence – you’re not actually taking the apple to be in front of you –, some other forms of mental imagery may be accompanied by the feeling of presence, for example, in the case of lucid dreaming and in some forms of hallucinations (which are widely taken to be forms of mental imagery in psychiatry, see Nanay 2016).

 The definition I have been using is a negative definition. It defines mental imagery as (to rephrase a bit) sensory representation not triggered directly by sensory input. But it leaves open the question about what this sensory representation is triggered by (directly). In some cases, it is triggered by top-down processes, as in the case of closing your eyes and visualizing an apple. But in other cases, it is triggered laterally, by, for example, input in another sense modality. When you watch the tv muted, for example, your auditory representation (and often your salient auditory experience) is not directly triggered by the auditory input – there is no auditory input as the tv is muted. It is directly triggered by the visual input of the images on tv (Nanay 2018, Spence and Deroy 2013).

 It should be clear that this concept of mental imagery has nothing to do with the kind of tiny images in our mind that Gilbert Ryle was making fun of (Ryle 1949). Mental imagery is not something we see: it is a certain kind of perceptual representation. So it is in no way more mysterious than other kinds of perceptual representation (like the one involved in perception proper). Nor do we need to postulate any ontologically extravagant entities (like tiny pictures in our head) to talk about mental imagery any more than we need to postulate these entities in order to talk about perception.

 Further, while the definition of mental imagery I have been using does seem to capture the ordinary usage of the term, it also carves up mental phenomena somewhat differently. As we have seen, it allows for involuntary imagery. But it also allows for unconscious mental imagery as nothing in the definition says that the perceptual representation that is not triggered directly by sensory input must be a conscious representation.

 We have an overwhelming amount of evidence that perception may be conscious or unconscious (e.g., Kouider and Dehaene 2007). But if perceptual representations that are directly triggered by sensory input (that is, perception) may be unconscious, then it would be arbitrary to posit that perceptual representations that are not directly triggered by sensory input (that is, mental imagery) may not be. Further, some people report having no conscious mental imagery – these people are called aphantasics and in the decade or so a lot of experimental studies were conducted to find out about the causes and nature of aphantasia (see, e.g., Zeman et al. 2007). And while aphantasia seems to be a non-monolithic phenomenon, where many different things can lead to the lack of conscious mental imagery, there is clear evidence that at least a subset of aphantasics, while reporting to have no conscious mental imagery at all, do have mental imagery in the sense of perceptual representation that is not directly triggered by sensory input. They have unconscious mental imagery (Nanay 2021).

 In short, mental imagery may be voluntary or involuntary and it may be conscious or unconscious. It is a scientifically respectable (and even publicly observable) category that is well suited to replace the suspicious ordinary language concept of imagination.

1. **Mental imagery and imagination**

What is the relation between mental imagery and imagination? We have seen that there are cases of mental imagery that do not count as imagination: earworms, dreams, flashbacks, hallucination, multimodal mental imagery, and so on. When we have flashbacks to an unpleasant scene, this is mental imagery, but not imagination in any sense of the term (see also Gregory 2010, 2014, Langland-Hassan 2015, Wiltsher 2016, Arcangeli 2020 on the differences between imagination and mental imagery). It is involuntary mental imagery. The same goes for earworms. Again, an earworm is not auditory imagination, but it is auditory mental imagery.

So we can have mental imagery without imagination. But how about the other way round? Can we have imagination without mental imagery? In other words, does imagination necessarily involve the exercise of mental imagery (Kind 2001, Van Leeuwen 2016, Langland-Hassan 2020)? The answer depends on what kind of imagination the question is about.

We have seen that there is a big difference between sensory imagination and propositional imagination. Recall that “the distinctive feature of [sensory] imagining is that a condition of its success is to recreate the sensory experience of the thing imagined” (Noordhof 2008, p. 337). If so, then sensory imagination is nothing else but the voluntary and conscious use of mental imagery. No problem here. The problem comes with propositional imagination. Does propositional imagination presuppose the use of mental imagery?

 In other words, there is broad agreement that sensory imagination, for example, imagining seeing the Eiffel Tower from across the river, does necessarily involve mental imagery (in this case, visual imagery). But there is no agreement about whether mental imagery is necessarily involved in propositional imagination, for example, imagining that Paris is the capital of Italy.

 And given that my aim is to replace the ordinary language category of imagination with the technical concept of mental imagery, this is a major potential worry. Remember that the concept of representation inherits some of the explanatory advantages of the concept of belief because beliefs are representations (but there are also representations that are not beliefs). If there are forms of imagination that have nothing to do with mental imagery, no structurally similar inheritance of explanatory power would be possible. I will argue that we have empirical reasons to think that mental imagery is necessarily involved in all forms of imagination.

1. **Sensory imagination / propositional imagination / supposition**

At this point, we need to introduce yet another category in the discussion of sensory and propositional imagination, namely, supposition (for example, supposing something for the sake of argument, see Arcangeli 2019). In the philosophy of imagination, distinguishing sensory and propositional imagination involves distinguishing both of these forms of imagination from supposition. So not one, but two division-lines need to be drawn: one between sensory and propositional imagination and one between propositional imagination and supposition.

 Mental imagery is used heavily in these debates about how to delineate imagination and supposition, but, depending on where one stands on whether propositional imagination necessarily involves mental imagery, it is used very differently. Those who believe that mental imagery is necessary for propositional imagination can and often do draw the line between imagination (both sensory and propositional) and supposition in terms of mental imagery: imagination involves mental imagery, whereas supposition does not (see Kind 2001 for a modern locus classicus). Those, in contrast, who deny that mental imagery is necessary for propositional imagination can and often do draw the line between sensory imagination on the one hand and propositional imagination as well as supposition on the other in terms of mental imagery: mental imagery is necessary for sensory imagination, but not for propositional imagination and supposition. Either way, the relation between mental imagery and imagination is of crucial importance in how the terrain of imaginative states is broken down.

It needs to be pointed out that many of the arguments on either side appeal to introspection (Byrne 2007, Chalmers 2002). Here is a representative anti-imagery claim: "There is a sense in which we can imagine situations that do not seem to be potential contents of perceptual experiences. One can imagine situations beyond the scale of perception: e.g. molecules of H2O, or Germany winning the Second World War. One can imagine situations that are unperceivable in principle: e.g. the existence of an invisible being that leaves no trace on perception. And one can imagine pairs of situations that are perceptually indistinguishable:..." (Chalmers 2002, p. 151).

The problem with arguments of this kind is (at least) threefold. First, we know from an overwhelming amount of empirical studies that introspection is an unreliable guide to our mind (see Schwitzgebel 2008 for a summary). Just because a philosopher introspects when imagining a scenario, this is not a reliable guide for finding out what happens while imagining this scenario.

Second, even if we accept introspection as a more or less reliable methodology, given the well-documented interpersonal variations between different people, any appeal to introspection would need to be indexed to the introspector. We have seen that some people do not report any conscious mental imagery at all. This is called aphantasia and this is one end of the spectrum. On the other end of the spectrum we find people with extremely vivid imagery experiences – a condition often called hyperphantasia. Most of us are somewhere in between. And we know a fair amount about the neuroscience of what the vividness and precision of mental imagery depend on. There is linear correlation between the vividness of mental imagery and some straightforward (and very easily measurable) physiological features of the subject’s brain (such as the size of the subject’s primary visual cortex and the relation between early cortical activities and the activities in the entire brain (see Bergmann et al. 2016 and Cui et al. 2007).

But these findings about aphantasia and hyperphantasia and the interpersonal variations in the vividness of mental imagery should also give us some reasons to be suspicious about any kind of reliance on phenomenology and introspection when thinking about mental imagery (see also Kozhevnikov et al. 2009 for some evidence on cross-cultural variations in the vividness of mental imagery).

The interpersonal variations in imaginative phenomenology – the extreme case of which is demonstrated in the aphantasia research – highlight just how unlikely it is that any great genius of a philosopher working on mental imagery can read off a plausible account of mental imagery from her experiences as these experiences are very different from the experiences of most people.

The same goes for other philosophical debates where mental imagery plays a role, like the one about whether mental imagery is necessarily involved in propositional imagination. There is no carefully controlled psychological research about how philosophers’ intuitions on this question vary as a result of the vividness of their mental imagery. But there is carefully controlled psychological research about how philosophers’ and psychologists’ intuitions vary as a result of the vividness of their mental imagery when it comes to the so-called Imagery Debate of the 1980s (the debate about whether the format of mental imagery is imagistic or propositional, see Cohen 1996 for a summary). A fairly large study showed that the vividness of imagery has significant impact on theoretical commitments in this debate (Reisberg 2003). Researchers with less vivid mental imagery were more likely to take the propositional side and those with more vivid mental imagery tended to come down on the imagistic side. We could expect similar results about the debate over whether mental imagery is necessarily involved in propositional imagination

The third problem with appeal to introspection in deciding whether propositional imagination necessarily involves mental imagery is the following. If we allow for unconscious mental imagery, as I argued we should, then arguments from introspection would not lead to any kind of conclusive resolution. It may be that no conscious images flash in the philosopher’s mind, but it does not follow from this that no mental imagery is involved in this imaginative episode. In other words, intuitions are entertaining to consider, but the only way in which we can assess whether imagination necessarily involves mental imagery is by empirical means.

1. **Mental imagery in propositional attitudes**

The crucial piece of evidence for the importance of mental imagery in propositional imagination (and also in supposition) comes from recent (and not so recent) findings about the importance of mental imagery in language processing. This idea is not new. David Kaplan famously said that:

“Many of our beliefs have the form: ‘The color of her hair is \_\_\_’, or ‘The song he was singing went\_\_\_’, where the blanks are filled with images, sensory impressions, or what have you, but certainly not words. If we cannot even say it with words but have to paint it or sing it, we certainly cannot believe it with words” (Kaplan 1968, p. 208).

My claim is that this reliance of language on mental imagery is not an exception, it is the rule.[[1]](#footnote-1) We now know that language processing is not completely detachable from mental imagery. Both generating linguistic utterances and hearing/reading them utilizes mental imagery. Some of the empirical findings supporting these claims come from neuroimaging. Describing a scene relies on our ability to generate mental imagery – early cortical representations not directly triggered by sensory input (Mar 2004, Zadbood et al. 2017). Even more importantly, hearing a description invariably triggers mental imagery – again, not necessarily conscious mental imagery, but early cortical representations not directly triggered by sensory input and it is this imagistic representation that is remembered, not the words we heard (Zwaan 2016, Zwaan and Radvansky 1998).

We understand a fair amount of how this happens and, crucially, we know a lot about the ways in which linguistic labels change (and speed up) perceptual processes and we also know a fair amount about the time scale of this influence. The most important piece of finding both from EEG and from eye tracking studies is that linguistic labels influence shape recognition in less than 100 milliseconds (Boutonnet and Lupyan 2015, de Groot et al. 2016, Noorman et al. 2018). This is much much shorter than the time that would be needed for perceptual processing to reach all the way up to non-cortical representations and then trickle all the way down again to the primary visual cortex (see Thorpe et al. 1996 and Lamme and Roelfsema 2000 for the temporal unfolding of visual processing in unimodal cases and see Kringelbach et al. 2015 for a summary of the relative slowness of non-early cortical processing).

This means that linguistic processing and mental imagery interact at an extremely early stage of perceptual processing – by any account in early cortical processing. Again, all this indicates that imagistic and linguistic cognition are far from being independent from one another – they are deeply intertwined even at the earliest levels of perceptual processing. And, as a result, propositional imagination, by virtue of its reliance on language, also involves mental imagery.

While many of these neuroimaging and timing results are relatively new, the intimate connections between linguistic and imagistic representations have long been postulated in behavioral studies.

Probably the most famous of these go under the heading of ‘dual coding theory’ (Paivio 1971, 1986, Just et al. 2004). According to the dual coding theory, linguistic representations themselves are partly constituted (or at least necessarily accompanied) by mental imagery and this explains why concrete words (that are accompanied by more determinate mental imagery) are easier to recall than abstract words (that are accompanied by less determinate and in some cases very indeterminate mental imagery).

Dual coding theory started with the studies of the cognitive underpinnings of mnemotic abilities – the reasons why some people are better at remembering words than others. And while the ways in which remembering words correlates with mental imagery capacities were studied, it turned out that some words are systematically more difficult to remember than others. Examining a vast dataset of words as well as a vast number of subjects, there seems to be a correlation between how easily a word is remembered and how abstract/concrete it is. Abstract words like homology are more difficult to remember and concrete words like homeowner are easier to remember, even if we control for the frequency of occurrence in language. And dual coding theory explains this difference in terms of the reliance of language processing on imagery: concrete words are remembered more easily because they trigger concrete mental imagery, which makes it easier to remember.

Paivio’s dual coding theory posited the importance of mental imagery in linguistic processing to explain the behavioral differences between the recall of concrete and abstract words. But the findings of the dual coding theory are exactly what we should expect given the more recent findings about the automatic and lateral triggering of early cortical representations in early stages of language processing. These older behavioral results and the more recent timing and neuroimaging findings paint the same picture: language processing itself essentially involves mental imagery.

Back to propositional imagination and supposition. Assuming that propositional imagination relies on language processing, mental imagery is then a crucial ingredient of propositional imagination. To go back to my example, imagining seeing the Eiffel Tower from across the river does involve visual mental imagery. But so do episodes of propositional imagination, like imagining that Paris is the capital of Italy. The mental imagery that is involved in imagining that Paris is the capital of Italy (say, the gustatory imagery of good coffee in a Parisian café), may not fix the content of this imaginative episode (something very explicit in Kind 2001). But it is triggered automatically each time we have a mental episode with language-like components. Further, an imaginative episode in one sense modality (say, audition) also automatically triggers early cortical representations in other sense modalities (say, vision) (see Vetter et al. 2014).

These empirical findings about the involvement of mental imagery in propositional imagination militate against using mental imagery for drawing a division-line between sensory and propositional imagination (as both involve imagery). But they should not be used as the mark of imagination in general either – that is, as a division-line between imagination (both sensory and propositional) and supposition, because supposition also involves mental imagery (for the same empirical reasons outlined in the last paragraph).

In other words, neither widespread ways of using mental imagery to keep apart sensory imagination, propositional imagination and supposition works as all these three mental phenomena involve mental imagery.[[2]](#footnote-2)

1. **Between sensory imagination and supposition**

I will argue that the reason why it seems challenging to draw division lines between sensory imagination and propositional imagination on the one hand and propositional imagination and supposition on the other is because the logical space between sensory imagination and supposition is not very significant. So there is not much between sensory imagination and supposition.

Let us start with a widely acknowledged and salient difference between imagination and supposition, which is highlighted in the imaginative resistance literature (Gendler 2000, 2006, Weatherson 2004, Walton 1994, Nanay 2010, Camp 2017). We can suppose any proposition, whatsoever. We can suppose, for the sake of the argument, logically or metaphysically impossible or ethically dubious propositions, for example But, if the phenomenon of imaginative resistance is a real phenomenon, we can’t imagine all propositions. We can’t imagine morally dubious propositions, for example, to use the classic imaginative resistance case, that “Giselda did the right thing in killing her baby, after all she was a girl” (Walton 1994). There are many explanations of imaginative resistance, but one thing they all have in common is that the set of propositions that we can imagine is narrower than the set of all propositions. Hence, the set of propositions that we can imagine is narrower than the set of propositions we can suppose.

Now let’s turn to another salient difference between imagination and supposition involves the temporal unfolding of these mental states. If you suppose, for example, when solving a mathematics problem, that a=b, this does not have a very significant temporal profile. As soon as the content of the supposed proposition (that a=b) is grasped, the supposition happened. This is not so when it comes to imagination. When you imagine that Paris is the capital of Italy, this mental episode is not completed when the proposition (that Paris is the capital of Italy) is grasped. If it were so, then all propositions could be imagined and we have seen in the previous paragraph, this is not so. When imagining that Paris is the capital of Italy, grasping the proposition is only the first step. Having grasped the proposition, we then elaborate the imagined proposition and it is exactly this elaboration that fails in those cases where imaginative resistance kicks in. Peter Langland-Hassan captures this feature of propositional imagination (which he calls A-imagining) when he insists that it is a “rich and elaborated […] thought about the possible” (Langland-Hassan 2020, p. 7). Propositional imagination is ‘rich and elaborated’, whereas supposition is neither rich nor elaborated (or maybe just much less rich and much less elaborated).

The big question is then where this elaboration comes from. And given the involvement of mental imagery in propositional imagination, the obvious answer would be that this elaboration happens with the help of mental imagery (see also the research on how, in voluntary imaginative episodes, mental imagery gets more vivid over time, see D’Angiulli and Reeves 2003/2004). This would explain why imagination (but not supposition) has an undeniable affective dimension (Moran 1994) and also why imagination (but not supposition) is a skill you can be better or worse at (Kind 2020). Again, this mental imagery does not need to be conscious and even when it is conscious, it does not need to be particularly determinate. It does not need to be able to fix the content of the imaginative episode either.

But at this point one may wonder whether one could find other forms of elaboration that could be used in the case of propositional imagination (which would be missing in the case of supposition). Maybe the elaboration in question is not imagistic, but propositional. When imagining that Paris is the capital of Italy, this proposition is elaborated with the help of further propositions (like the proposition that Paris has good coffee). The problem with this proposal is that suppositions are also elaborated with the help of further propositions, in fact, this is exactly, how *reductio ad absurdum* arguments proceed: we suppose the proposition for *reductio* and then elaborate it with the help of further propositions up to the point where we hit a contradiction. So if propositional imagination were only elaborated with the help of further propositions, this would not explain how propositional imagination differs from supposition (and why we can’t imagine propositionally everything we can suppose).

In short, mental imagery is substantially involved both in sensory imagination and in propositional imagination. Sensory imagination is the voluntary use of conscious mental imagery. And propositional imagination is the supposition of a proposition that is elaborated with the help of mental imagery. Mental imagery is not, in contrast, substantially involved in supposition per se (as here mental imagery could be thought of as merely accompanying supposition without being constitutive of it).

One consequence of this way of thinking about imagination is that it casts doubt on how precise (or theoretically useful) the concept of propositional imagination really is as it appears to be really just a hybrid between supposition and sensory imagination. In various branches of philosophy, propositional imagination is routinely used as a guide to possibility – to whether, for example, zombies are possible. While there are lots of possible maneuvers and distinctions that I will not go through here, if propositional imagination is such a fragile concept, it makes one wonder whether it is capable of such theoretical heavy-lifting.

More importantly, given the substantive role of mental imagery in both sensory and propositional imagination, we can capture what is distinctive about both of these forms of imagination (again, categories our ordinary language gives us) in terms of the more scientifically respectable terms of mental imagery.[[3]](#footnote-3) Does this mean that we need to exile the term ‘imagination’ from our everyday discourse? Of course not. The term ‘imagination’ can be helpful in some communicative contexts, just as the term ‘lily’ can also be helpful in some communicative contexts. But when we are trying to understand how the mind works, we are better off relying on the concept of mental imagery.

1. **Conclusion: Imagistic vs. linguistic cognition**

Throughout the history of philosophy imagistic mental representations have been routinely contrasted with abstract, linguistic representations (see Yolton 1996 for a summary). So the assumption here is that there is a sharp contrast between two different kinds of mental representations: imagistic ones, like mental imagery and abstract, linguistic ones. There is imagistic cognition and there is linguistic cognition and the two have little to do with each other.

Just how far imagery reaches and how thick this layer of abstract linguistic representations is supposed to be is subject to debate. One way of thinking about the mind in general and mental representations in particular is to model it on language. We have a relatively clear idea about how language represents. So a tempting route would be to use that as a means to describe the way the mind represent as well. This way of thinking about the mind was very influential in philosophy in the 1960s and 1970s, when many philosophers of mind came from a philosophy of language background.

This way of thinking about the mind takes propositionally structured, language-like representations to be the default form of representations in general and mental representations in particular. This default is sometimes altered to fit specific mental representations, but the starting point is always propositionally structured, language-like representations. So the mind represents by means of propositionally structured, language-like representations. Beliefs are propositional attitudes, so they do exactly this – as do desires. And propositional imagination, as the name suggests, is also a propositional attitude. This way of thinking about mental representations either flat out denies that the mind could represent in any other way (which would make perception and imagery either propositionally structured or not a representation) or when it allows for the existence of non-propositional representations, say, perception or mental imagery, it downplays their importance.

But here is another way of thinking about the mind. The human mind is not that different from the minds of other vertebrates. In any case, it has evolved from animal minds, so in order to understand the exquisite complexity of the human mind, we should start with understanding something simpler, the way the animal mind represents and once we have fully understood that, we can then, and only then address the uniquely human fancy features, like language.

The way animals (at least vertebrates) perceive is very similar to the way we perceive. And the way animals (again, at least vertebrates) exercise their mental imagery is also very similar to the way we do so. So the default for understanding how the human mind represents should not be propositionally structured linguistic representation, but rather imagistic representation of the kind perception and imagery uses. When we have fully understood how imagistic representations work, how they interact with each other and how they lead to action, and only then can we begin to address the fancy gloss on top of this fundamental representational machinery, which is uniquely human.

I once described the uniquely human features of the human mind, like language, as the icing on the cake (Nanay 2013): when we try to understand the cake, we should not start with the examination of the icing, we should begin with the cake itself. Understanding the icing is a nice extra perk. But if you make inferences about the cake itself from what you know about the icing, you’ll get it all wrong.

The argument I gave in this chapter is a case study of all this. We posited a propositional attitude, namely, propositional imagination, because we have workable models of how propositions work from philosophy of language, and we are trying to understand various versions of imaginative phenomena from this starting point. What I am suggesting is that this is a mistaken starting point and we should start with the much simpler mental capacity of mental imagery, something we share with animals.

As we have seen in Section VI above, we have very strong reason to question the strict opposition of the imagistic and propositional parts of the mind: of the cake and the icing. Not only is the icing of language a very minor part of understanding the mind. It also relies heavily on imagistic representations, so much so that language processing cannot be fully understood without understanding mental imagery. To use the icing and the cake analogy one last time, the icing, it turns out, is made of many of the same ingredients as the cake itself. This is not particularly surprising: the fancy gloss of uniquely human mental capacities, like language processing has evolved from the imagistic animal mind, so these capacities had to use the ingredients that were already present. They had to have imagistic representations as their starting point.

In some sense this is an even worse news for the friends of using language as a means to understand the mind. The way the mind processes language relies heavily on mental imagery. So taking the way language represents as a starting point won’t help us to understand the vast majority of our (non-linguistic) mental representations. But it won’t help us to fully understand language processing itself either.

References:

Arcangeli, M. 2019 *Supposition and the Imaginative Realm*. London: Routledge.

Arcangeli, M. 2020 “The Two Faces of Mental Imagery,” *Philosophy and Phenomenological Research,* 101: 304-322.

Bergmann, J., E. Genc, A. Kohler, W. Singer and J. Pearson (2016) Smaller primary visual cortex is associated with stronger, but less precise mental imagery. *Cerebral Cortex* 26: 3838-3850.

Boutonnet, B. & G. Lupyan, 2015, “Words Jump-Start Vision: A Label Advantage in Object Recognition,” *Journal of Neuroscience* 35, 9329–9335.

Byrne, A., 2007, “Possibility and imagination,” *Philosophical Perspectives*, 21: 125–44.

Camp, E. 2017 Perspectives in imaginative engagement with fiction. *Philosophical Perspectives*, 31: 73–102.

Chalmers, D. J., 2002, “Does conceivability entail possibility?”, in Gendler, T. S. and Hawthorne, J. (eds.), *Conceivability and Possibility*. Oxford: Oxford University Press, pp. 145–200.

Churchland, Paul M., 1981, “Eliminative Materialism and the Propositional Attitudes,” *Journal of Philosophy*, 78: 67– 90.

Churchland, Paul M. 1988 "Folk Psychology and the Explanation of Behaviour", *Proceedings of the Aristotelian Society*, supp. 62: 209--21

Cui, X., C. B. Jeter, D. Yang, P. R. Montague and D. M. Eagleman 2007 Vividness of mental imagery: Individual variability can be measured objectively. *Vision Research* 47: 4474-478.

Currie, Gregory 1995 Visual Imagery as the Simulation of Vision. *Mind and Language* 10: 25-44.

Currie, Gregory and Ian Ravenscroft 1996 Mental simulation and motor imagery. *Philosophy of Science* 64: 161-180.

Currie, Gregory and Ian Ravenscroft 2002 *Recreative Minds: Imagination in Philosophy and /Psychology.* Oxford: Oxford University Press.

D’Angiulli, A. and A. Reeves 2003/2004 Probing vividness increment through imagery interruption. *Imagination, Cognition and Personality* 23: 63-78.

de Groot, F., F. Huettig, & C. N. L. Olivers, 2016, “When meaning matters: The temporal dynamics of semantic influences on visual attention,” *J. Exp. Psychol. Hum. Percept. Perform.,* 42: 180–196.

Dennett, D. C. 2005 *Sweet Dreams*. Cambridge, MA: MIT Press.

Dupré, J. 1981 Natural Kinds and Biological Taxa. *The Philosophical Review* 90: 66-90.

Egan, Andy. 2008. “Imagination, delusion, and self-deception.” In Tim Bayne & Jordi Fernandez (eds.), *Delusion and Self-Deception: Affective and Motivational Influences on Belief Formation* (Macquarie Monographs in Cognitive Science). Psychology Press.

Gendler, T. Sz. 2000 The Puzzle of Imaginative Resistance. *Journal of Philosophy* 97: 55–81.

Gendler, T. Sz. 2006 Imaginative Resistance Revisited. In: Shaun Nichols (ed.): *The Architecture of the Imagination*, pp. 149-173.

Gregory, D., 2010, “[Imagery, the Imagination and Experience,”](http://onlinelibrary.wiley.com/doi/10.1111/j.1467-9213.2009.644.x/abstract) *Philosophical Quarterly,* 60: 735-753.

Gregory, D., 2014, *Showing, Sensing, and Seeming: Distinctively Sensory Representations and their Contents.* Oxford: Oxford University Press.

Just, M. et al. (2004). Imagery in sentence comprehension: an fMRI study. *NeuroImage* 21, 112-124.

Kind, Amy 2001 Putting the image back to imagination. *Philosophy and Phenomenological Research* 62: 85-109.

Kind, A., 2013, “The Heterogeneity of the Imagination,” *Erkenntnis*, 78 (1): 141-59.

Kind, A., 2017, “Imaginative vividness,” *Journal of the American Philosophical Association,* 3: 32-50.

Kind, A. 2020. “The Skill of Imagination.” In Ellen Fridland & Carlotta Pavese, eds., *The Routledge Handbook of Philosophy of Skill and Expertise*, 335-46. London and New York: Routledge.

Kind, A. this volume Why we need imagination. In: B. McLaughlin and J. Cohen (eds.): *Contemporary Debates in Philosophy of Mind*. Oxford: Blackwell.

Kleiman, Lowell 1978 Mental images: Another look. *Philosophical Studies 34*: 169-176.

Kouider, S., & S. Dehaene. 2007. Levels of processing during non-conscious perception: A critical review of visual masking. *Philosophical Transactions of the Royal Society B* 362: 857-875.

Kozhevnikov, M., O. Louchakova, Z. Josipovic and M. A. Motes 2009 The enhancement of visuospatial processing efficiency through Buddhist deity meditation. *Psychological Science* 20: 645-653.

Kringelbach, M. L., A. R. McIntosh, P. Ritter, V. K. Jirsa and G. Deco 2015 The rediscovery of slowness: Exploring the timing of cognition. *Trends in Cognitive Sciences* 19: 616-628.

Lamme, V. A. and P. R. Roelfsema 2000 The distinct modes of vision offered by feedforward and recurrent processing. *Trends in Neuroscience* 23: 571-579.

Langland-Hassan, P., 2015, “Imaginative Attitudes,” *Philosophy and Phenomenological Research,* 40: 664­–686.

Langland-Hassan, P. 2020 *Explaining imagination*. Oxford: Oxford University Press.

Mallon, R., Machery, E., Nichols, S., & Stich, S. (2009). Against arguments from reference. *Philosophy and Phenomenological Research,79*(2), 332–356.

Mar, Raymond A. 2004. "The Neuropsychology of Narrative: Story Comprehension, Story Production and their Interrelation." *Neuropsychologia* 42 (10): 1414-1434.

Matthews, G. B. 1969 Mental Copies. *Philosophical Studies 78*: 53-73.

Moran, Richard. 1994. "The Expression of Feeling in Imagination." *The Philosophical Review* 103: 75-106.

Nanay, B. (2010). Imaginative resistance and conversational implicature. *The Philosophical Quarterly*, 60(240): 586-600.

Nanay, B. (2013). *Between Perception and Action*. Oxford: Oxford University Press.

Nanay, B. (2014). Empirical problems with anti-representationalism. In: B. Brogaard (ed.): *Does Perception have Content?* New York: Oxford University Press, pp. 39-50.

Nanay, B. (2015). Perceptual content and the content of mental imagery. *Philosophical Studies* 172: 1723-1736.

Nanay, B. (2016). Hallucination as mental imagery. *Journal of Consciousness Studies* 23 (7-8): 65-81.

Nanay, B. (2017). Sensory substitution and multimodal mental imagery. *Perception* 46: 1014-1026.

Nanay, B. (2018). Multimodal mental imagery. *Cortex* 105: 125-134.

Nanay, B. (2020). Motor imagery and action execution. *Ergo*, 7: 13.

Nanay, B. (2021). Unconscious mental imagery. *Philosophical Transactions of the Royal Society B*, 376 (1817): 20190689.

Nanay, B. forthcoming a *Mental Imagery*. Oxford: Oxford University Press.

Nanay, B. forthcoming b Entity realism about mental representations. *Erkenntnis*, forthcoming.

Noordhof P. (2008). Expressive Perception as Projective Imagining, *Mind and Language* 23(3): 329–358.

Noorman, S., D. A. Neville & I. Simanova, 2018, “Words affect visual perception by activating object shape representations,” *Scientific Reports,* 8:14156.

O'Shaughnessy, Brian. 2000. *Consciousness and the World.* Oxford: Clarendon Press.

Paivio, A. 1971 *Imagery and Verbal Processes*. New York: Holt, Rinehart and Winston.

Paivio, A., 1986, *Mental representations: a dual coding approach*. Oxford: Oxford University Press.

Pearson, J., T. Naselaris, E. A. Holmes, and S. M. Kosslyn, 2015, “Mental Imagery: Functional Mechanisms and Clinical Applications,” *Trends in Cognitive Sciences,* 19: 590-602.

Perniss, P., R. L. Thompson and G. Vigliocco 2010 Iconicity as a general property of language. *Frontiers in Psychology* 1: 227.

Reisberg , D., D. G. Pearson and S. M. Kosslyn 2003 Intuitions and introspections about imagery: The role of imagery experience in shaping an investigator’s theoretical views. *Journal of Applied Psychology* 17: 147-160.

Ryle, Gilbert 1949: *The Concept of Mind*. London: Huchinson.

Schellenberg, Susanna. 2013. “Belief and Desire in Imagination and Immersion.” *Journal of Philosophy* 110 (9): 497-517.

Schlenker, Philippe 2017 Sign language and the foundations of anaphora. *Annual Review of Linguistics* 3: 149-177.

Schwitzgebel, Eric 2008 [The Unreliability of Naive Introspection](http://www.faculty.ucr.edu/~eschwitz/SchwitzAbs/Naive.htm). *Philosophical Review,*117: 245-273.

Shorter, J. M. 1952 Imagination. *Mind 61*: 528-542.

Spence, C. & O. Deroy, 2013, “Crossmodal imagery,” in: S. Lacey and R. Lawson (eds.), *Multisensory Imagery*, New York: Springer, pp. 157-183.

Stich, S. P. (1983). *From Folk Psychology to Cognitive Science: The Case Against Belief*. Oxford: Oxford University Press.

Stich, S. P. (1996). *Deconstructing the mind*. Oxford: Oxford University Press.

Thorpe, S. D. Fize and C. Marlot 1996 Speed of processing in the human visual system. *Nature* 381: 520-522.

Cohen, J. 1996 The imagery debate: A critical assessment. *Journal of Philosophical Research* 21: 149-182.

Van Leeuwen, N., 2016, “The Imaginative Agent,” in A. Kind & P. Kung(eds.), *Knowledge Through Imagination*, New York: Oxford University Press, pp. 85-109.

Vetter P., Smith F. W., Muckli L. (2014). Decoding sound and imagery content in early visual cortex. *Current Biology* 24: 1256–1262.

Walton, K. L. (1994). Morals in fiction and fictional morality (I). *Supplement to the Proceedings of The Aristotelian Society*, 68: 27-50.

Weatherson, B. (2004). Morality, fiction, and possibility. *Philosophers' Imprint* 4(3): 1-27.

Wiltsher, N. 2016 Against the additive view of imagination. *Australasian Journal of Philosophy* 94: 266-282.

Yolton, J. W., 1996, Perception and Reality: A History from Descartes to Kant. Ithaca, NY: Cornell University Press.

Zadbood, Asieh, Janice Chen, Yuan Chang Leong, Kenneth A. Norman, and Uri Hasson. 2017. "How we Transmit Memories to Other Brains: Constructing Shared Neural Representations Via Communication." *Cerebral Cortex* 27 (10): 4988-5000.

Zeman, A., McGonigle, D., Gountouna, E., Torrens, L., Della Sala, S., & Logie, R. (2007). "Blind imagination'': Brain activation after loss of the mind's eye. *Journal of Neurology Neurosurgery & Psychiatry*, 78(2), 209-209.

Zwaan, Rolf A. 2016. "Situation Models, Mental Simulations, and Abstract Concepts in Discourse Comprehension." *Psychonomic Bulletin & Review* 23 (4): 1028-1034.

Zwaan, Rolf A. and Gabriel A. Radvansky. 1998. "Situation Models in Language Comprehension and Memory." *Psychological Bulletin* 123 (2): 162.

1. An emerging body of findings about iconic representations in language itself (especially in languages other than Indo-European ones and in sign language) gives further support to this view, see, e.g, Perniss et al. 2010, Schlenker 2017. [↑](#footnote-ref-1)
2. This, of course, leaves open the possibility that sensory imagination, propositional imagination and supposition can be kept apart in some other ways, which would have nothing to do with mental imagery. [↑](#footnote-ref-2)
3. We have seen in Section II that there are other forms of imagination besides sensory and propositional imagination, for example, imagining doing something or imagining being someone. Regardless of how we analyze these forms of imagination, mental imagery will be substantially involved (or, in the case of imagining doing something, at the very least, motor imagery would be involved, see Currie and Ravenscroft 1996, Nanay 2020). [↑](#footnote-ref-3)