Affording Imagination

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Abstract
Discussion of affordance perception focuses almost exclusively on affordances for non-mental actions like climbing, walking and eating. This paper asks whether we might also perceive affordances for a specific class of mental actions: acts of imagination. We first explore how the environment can present opportunities for imaginative action. We then combine phenomenological and theoretical considerations to argue that we do indeed perceive affordances for imaginative action. Putting this claim to work, we apply the concept of imaginative affordances to the topics of imaginative skill and imaginative tools.

Keywords: Imagination; Perception; Affordance; Action

1. The Question
This paper explores whether we perceive affordances for imaginative action. Affordances are opportunities for action in an agent’s environment. An agent might perceive a ladder as affording climbing, an apple as affording eating or a teapot as affording pouring. In cases like these the actions afforded are bodily actions. We ask whether affordance perception also encompasses opportunities for mental acts of imagination. Might you perceive a wrapped present as affording imagining what’s inside? Does an obstacle course afford imagining how to traverse it? Does a precariously placed object afford imagining what would happen if it fell?

Our target question sits at the intersection of two rich philosophical topics: affordance perception and imagination. For the affordance perception literature, our question invites an exploration of how far affordance perception extends and, in particular, whether it encompasses any affordances for mental action. The term ‘mental affordances’ was introduced by McClelland (2020), who briefly discusses the possibility of imaginative
affordances. Related work by Metzinger (2017), Jorba (2020) and Proust (2016; 2023) uses the term ‘cognitive affordances’ and will be discussed later on. Our proposal is a natural extension of this work. For the imagination literature, our question invites exploration of the interface between perception and imagination and reflection on what role the environment might play in enabling imaginative activities.¹

Our plan for the paper is as follows. In Section 2 we deal with some conceptual preliminaries and offer a more precise formulation of our target question. In Section 3 we make the case for the perception of imaginative affordances, drawing on a combination of illustrative cases and wider theoretical considerations. In Section 4 we put the claim to work, exploring how it sheds light on imaginative tools and imaginative skills, and we conclude by recognizing how such applications can further enrich the philosophy and psychology of perception and imagination.

2. Conceptual Preliminaries
2.1. Key concepts
To make our target question more precise there are three concepts we need to capture: affordances; perception; and imagination. This will then allow us to pin down what it means to perceive imaginative affordances.

The notion of imaginative affordances has already enjoyed some attention in the context of the ‘4E’ movement that regards cognition as embodied, embedded, extended and enactive. One challenge for 4E approaches is to ‘scale-up’ their accounts of ordinary bodily actions to higher cognitive processes such as deliberating, remembering and imagining. Since 4E accounts of ordinary bodily action typically appeal to affordance perception, it would be natural for them to understand imaginative action in terms of our sensitivity to imaginative affordances. However, the very notion of imaginative actions does not sit well in a 4E framework. On a standard conception of imagination, to imagine something involves forming a mental representation of it through an internal neural process. However, the 4E approach eschews mental representations and rejects a skull-bound conception of cognition. In light of this tension, 4E advocates have sought to reconceive imagination in terms more amenable to their framework. Although we will be drawing on this important literature, our goal will be to make a case for the perception of imaginative affordances that doesn’t rely on a prior commitment to the 4E approach. Accordingly, our definitions of the key concepts will not be bound by a 4E framework.

So first, what are affordances? The concept of affordances was introduced by J.J. Gibson (1979) and plays a central role in ecological psychology. An affordance is a possibility for action presented by one’s environment. A chair, for example, might afford sitting. Although the affordance belongs to something in the environment – in this case a chair – the object has that property relative to an individual. It affords sitting for the agent. And something that affords sitting for one agent might not afford sitting for another. When a chair does

¹ To our knowledge, no consistent research has yet been conducted on the role of the environment in enabling imaginative actions and the perception of imaginative affordances. Recently, we undertook empirical studies on this topic with psychologists Magdalena Szubielska and Pawel Fortuna at John Paul II Catholic University of Lublin. This study explored how experience in virtual reality environments altered the perception of imaginative affordances in everyday objects and will be published in due course.
afford sitting for an agent, it does so in virtue of the agent’s actual dispositions or *abilities for action*. An agent’s skills and bodily properties give them the ability to sit on certain things and a suitable chair presents an opportunity to put that ability into action. In this case the affordance offered by the environment is attached to a specific object – the chair. But in other cases it is an overall environmental situation that affords action. The situation in a nightclub, for example, might afford dancing but the affordance is presented by the environment as a whole rather than by some specific object (Siegel 2014).

This gives us the following quick definition of affordances: an object or situation $x$ affords $\varphi$-ing for a subject $S$ iff $x$ makes it possible for $S$ to $\varphi$. This definition captures the essence of the concept whilst remaining relatively neutral on some of the more contentious details. The 4E approach comes along with specific metaphysical commitments about agents, environments and their mutual dependence. Many theorists offer a conception of affordances that builds these metaphysical commitments into the definition of affordances. However, our broader definition attempts to stay neutral on such matters.

Next, what is perception? Perception is the reception of information about the environment by a subject through their senses. Although it is not uncommon to posit unconscious perception of stimuli, our concern is with phenomenally conscious perception. A subject’s perceptual experience is the perceptual aspect of their overall phenomenology. Your current visual experience, for example, is part of your perceptual phenomenology. Seeing the redness of a teapot then involves visually experiencing the teapot’s redness. Perception can be understood from a representationalist stance as a kind of internal representation of one’s environment. On this view, perceiving a teapot involves being in a perceptual state with content that includes the teapot. Perception can also be understood from a non-representationalist stance in terms of the subject being in direct perceptual contact with their environment. On this view, perceiving a teapot involves picking up on information about the teapot in one’s environment but does not involve an internal state that represents the presence of the teapot. 4E theorists, along with J.J. Gibson himself, adopt this anti-representationalist stance. Again though, we will stay neutral on the question of whether perception is representational.

What is imagination? Liao and Gendler (2020) describe imagination as follows:

To imagine is to represent without aiming at things as they actually, presently, and subjectively are. One can use imagination to represent possibilities other than the actual, to represent times other than the present, and to represent perspectives other than one’s own. (2020)

To imagine the teapot on the table being the other way around is to imagine a possibility other than the actual. To imagine where your teapot might be in a year is to imagine a time other than the present. To imagine how your teapot looks to someone else is to imagine a perspective other than your own. Liao and Gendler build the notion of representation into their definition, but – to make our case here – we do not need to take the representational view on imagination for granted.

Imagination can be further divided into different kinds. Perhaps the most obvious form of imagination is sensory imagination. In sensory imagination, we conjure up a perception-like experience of the non-actual. When I imagine the teapot being a different colour, for
example, I might form the image of a blue teapot. Or when I imagine the sound of a trumpet I might form something akin to the sensory experience of hearing a trumpet. We could also classify motor imagery as a type of sensory imagination because when imagining a particular movement, one may experience a feeling similar to the sensory feeling of executing that movement (see Van Leeuwen 2011).

The second form of imagination is supposition. To suppose something is to consider a proposition hypothetically. One might, for example, consider a hypothetical scenario in which a teapot is hailed as a great work of art. Of course, supposing this could well involve forming mental images of the scenario in question. In this case, one might form a mental image of the teapot being presented prominently in a major art gallery. Nevertheless, it is plausible that such sensory imagining is not necessary for supposition. You can consider a hypothetical situation without picturing it. Indeed, those with apraxia are unable to form mental images yet have no trouble with supposition (Blomkvist 2022). Where sensory imagination can be regarded as a counter-part to perception that is untethered from the actual, supposition can be regarded as a counter-part to belief that is similarly untethered from the actual.

A third form of imagination is pretence. To engage in pretence is to pretend that things are other than they are. You can pretend that an umbrella is a sword, for example. The other forms of imagination are again relevant here. Perhaps this act of pretence involves supposing that the umbrella is a sword. And in some cases you might conjure up a sensory image of a sword. However, such actions are not sufficient for pretence. You can suppose that scenario and/or conjure up that sensory image without thereby pretending anything. It is also doubtful that either such imaginative action is necessary for pretence (Dunin-Kozicka & Gut, 2022; Weichold & Rucińska, 2022). If someone waves the umbrella in a certain way whilst shouting ‘en garde’ they are plausibly pretending that the umbrella is a sword. If it turns out that they were neither entertaining the proposition that the umbrella is a sword nor mentally picturing a sword, one could still coherently claim that they were engaging in pretence.

How these forms of imagination relate, and whether they all deserve to be called ‘imagination’, are vexed issues. One thing to note is that all three forms do have an important feature in common viz. the subject engaging with a non-actual possibility. The umbrella is not a sword, but if you picture it as a sword, suppose it to be a sword or pretend that it is a sword, then in all these cases you engage with the non-actual. We will adopt an inclusive conception of imagination that encompasses all three forms of imagining. One reason for this is that it is often hard to keep the three varieties apart. As we have seen, imagining that an umbrella is a sword could involve a subtle interplay of all three types of imagining. Another reason for adopting an inclusive conception is that we do not want to place any artificial limits on our target question. By taking too narrow a view of imagination, we might miss out on some legitimate candidates for imaginative affordances.²

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² If compelling reasons were offered to deny that supposition or pretence are forms of imagination, it would not undermine the main claims made in this paper. We are interested in the scope of affordance perception so if we perceive affordances-to-suppose or affordances-to-pretend that would be an important result regardless of whether such cases qualify as imaginative affordances.
Using these definitions, we can now better capture our target question. An object or situation \( x \) affords imagining for a subject \( S \) iff \( x \) makes it possible for \( S \) to perform a specific imaginative action \( \varphi \). When it comes to imaginative actions, these may encompass – as we noted above – forming a sensory image, supposing a proposition, engaging in a pretence, or some combination of each. When it comes to our understanding of possibility, we will mean practical (rather than theoretical or logical) possibility, since whether \( x \) affords imaginative action \( \varphi \) will rely on certain actual properties of the situation or object \( x \) and the actual dispositions of the subject \( S \) in the given circumstances \( c \). We can therefore say that – under some practical conditions – \( x \) makes \( \varphi \) a live option for \( S \). And lastly, regarding performing the afforded imaginative action, we can say that sometimes the agent will not act on this affordance and sometimes they will. And when they do act on it, the extent to which their imagination is under their control will vary from case to case. We will expand on all this below.

### 2.2. Preliminary considerations

Many imaginative actions as such have little or no dependence on the environment, so almost anything can be imagined at any time, regardless of the material properties of one’s surroundings. You can close your eyes and imagine unicorns in almost any worldly circumstance. In your current environment, for example, you can probably form the image of a unicorn, suppose that unicorns exist and maybe even pretend that you are a unicorn. That being so, imagining is standardly viewed as will-dependent but world-independent or world-insensitive, as it can be prompted at will and exercised independently of what one encounters in the world (Kind, 2022a). For the bodily actions we’ve considered, the possibility of performing that action is contingent on the environment being a certain way. For instance, in order to deploy your eating ability there must be something edible in your environment. That’s why the concept of things affording eating is useful. But in order to imagine unicorns you just need your mental abilities. Almost all human agents – and likely some non-human agents too – can voluntarily perform various imaginative actions and are equipped with (at least basic) abilities to imagine.\(^3\) Of course, exercising these mental abilities might have some minimal dependence on your environment. If your environment is on fire, for example, you might find it impossible to imagine unicorns. But it would be a stretch to say that your current environment being flame-free makes it possible for you to imagine unicorns.

Imaginative affordances, at their core, require a close connection between one’s imaginative activities and one’s environment. Although there are countless imaginative acts that one can perform without any help from the environment, there are many others that rely essentially on it. Suppose one sees a unique item – a 17\(^{th}\)-century Chinese white teacup with a peculiar cat-handle – and then visually recreates this cup as painted blue. In this scenario the agent sees the item and generates a specific mental image of it. Hypothetically, \(^3\) There would be very few exceptions to this. One special instance would be individuals who report being unable to generate voluntary mental images, that is, those to whom the term ‘aphantasia’ refers today (Zeman et al., 2015). Even though this phenomenon has not been yet fully explained and the research is still ongoing, reports from individuals with aphantasia indicate that they at least experience serious difficulties when asked to mentally visualize certain things. That said, aphantasia affects sensory imagination not supposition. The aphantasiac thus has no troubles imagining unicorns existing even if they cannot conjure a mental image of a unicorn.
such a mental image could be produced by almost any other imaginative agent in almost any other worldly circumstances. But in reality there is only a slight probability of such a imagery being produced without the subject first perceiving this particular teacup. Here the imaginative action has a kind of probabilistic dependence on the environment such that although it could have occurred without these environmental conditions it counter-factually would not have occurred.

A deeper dependence on the environment can be found if we consider a slightly different scenario. Suppose one sees the same white teacup, but this time one imagines of it that it is in an ongoing process of alteration, e.g. being gradually painted blue. In this scenario the agent in a way projects her imagining onto the actually perceived object. To imagine of this teacup that it is being painted at the very moment when you are looking at it you must not only be familiar with the cup, but also have perceptual access to it. In fact, even if there were a perfect duplicate of the 17th-century Chinese teacup with a cat-handle, someone looking at the second cup would be able to imagine of that cup that it is being painted – but this would not be the same imaginative act as imagining of the original cup that it is being painted. The specific act of imagination is thus made possible by the item in front of you. This applies not just to objects but to wider situations. You can imagine of your local environment that it is a computer simulation. In the absence of that environment you could imagine all sorts of things about computer simulations, but those would be different imaginative actions.

Imagining something of a particular object or situation can be described as de re imagining. De re imagining is made possible by the presence of that object or situation. All objects and situations thus offer affordances for de re imaginings. This dependence on the environment can be described as follows: at time $t$ and with background circumstances $c$ executing imaginative action $\varphi$ would not be possible if a subject $S$ did not have perceptual access to the object or situation $x$ affording $\varphi$.

Some wider examples will help illustrate the formula. Most agents can visualize a dancing unicorn but in order to visualize a unicorn dancing on this white chair in the office of one of the authors, perceptual access to that chair is needed (N.B. at the time of writing the author was not actively exercising this sensory imagining but did recognize this action as imagine-able). Similarly, forming a mental image of the cat hidden in this orange box would not be possible unless you had seen the box at some point. Visualizing the next particular chess moves on this chessboard would not be possible if one did not perceive the chessboard. The what-if imagining of what one could have done 5 minutes earlier to prevent missing this train to Warsaw would not be possible at time $t$ if one had not witnessed the train leaving the station. All these examples – and there are obviously many more – show that the standard notion of world-independent imagination does not universally apply, and that the link between what is perceived and what is imagined can be much tighter than it is usually acknowledged.

One might, however, worry that the link between environment and action in these imaginative cases is not the kind of link specific to affordances. When a ball is kickable, kicking is something you can do to the ball. Similarly, when a teapot affords pouring the act of pouring is one you do with the teapot and when the chair affords sitting the act of sitting is one you perform on the chair. Objects afford having things done to them, but when you
engage in imaginative actions you don’t do anything to, with or on the things in your environment. As such, it could be argued these things do not present us with imaginative affordances. We suggest that this worry is misplaced for two reasons.

First, it is not a pre-requisite of x affording φ-ing that it is x that gets φ-ed. There are plenty of ordinary affordances for bodily action in which the afforded action is not something you do to the object or situation that presents the affordance. When an obstacle in your path affords stopping the object does not get stopped. And when a situation affords dancing the situation does not get danced. So although it is true that imaginative acts do not involve physically affecting our environment this needn’t preclude the physical environment from offering us imaginative affordances.

Second, there is an important sense in which imaginative acts are directed upon objects. Just as you can kick a ball across a field, you can imaginatively change the location of this ball, or you can imaginatively paint blue the 17th-century teacup that you hold in your hand. One can imaginatively do things to objects but also with them, on them, etc. You can imaginatively drink tea with the teacup in front of you or you can imagine sitting on this nearby chair. In a way, in all these examples what you do is project some imaginings onto objects. Acting on something mentally is then still directed toward that thing – like a movie projection is directed on a screen or a wall. The object is physically unaltered by our action, but that is just what we should expect when the action we perform is mental rather than bodily.

Speaking of doing actions with things in imagination, one might also worry that there are too many imaginative affordances, for all worldly environments, situations and objects may afford countless imaginative actions. Indeed, any object that we perceive can be imaginatively transformed by changing its size, shape, color, location, etc., or it can be reproduced in any other way by the means of visualization. What is more, any object that we perceive can lead to imagining different objects, or imagining various doings, events or situations. In this sense, physical objects are universally imagine-of-able (as they can be the main objects for our imaginings), imagine-x-able (as they can lead to imagine some other objects), as well as imagine-that-able or imagine-what-if-able (as they can trigger imagining certain possible scenarios), or even imagine-φ-ing-able (as they can provoke imagining doing certain things with them). Thus, theoretically, any perceived object in the environment can be the object of imagination and any object, environment or situation can spur various imaginative actions (not to mention that any combination of objects opens up another vast space of possible imaginative actions!). There would thus be a proliferation of imaginative affordances in an agent’s environment. It could be argued that the implausibility of this proliferation casts doubt on the notion of imaginative affordances.

Against this argument, we suggest that this worry rests on a double-standard. If we focus just on ordinary bodily affordances, the same problem arises. There are a huge number of bodily actions that can be performed in any given environment. The variety of things you can do with a teapot is boggling! But this doesn’t count against the notion of affordances for bodily action. Why not? Because such proliferation is unproblematic. It is true that environments make a vast range of bodily actions possible, so we shouldn’t shy away from positing a vast range of bodily affordances. Of course, an agent couldn’t possibly see all of
these affordances at one time, but there is a world of difference between an affordance existing and an affordance being perceived. Just as we perceive only a tiny sub-set of the bodily affordances that our environment offers, so too we perceive only a small fraction of the affordances for imaginative actions that it offers. The key challenge for us is not how many imaginative affordances we can perceive but whether we perceive them at all. It is this challenge that we will take up in the remainder of the paper.

3. Perceiving Imaginative Affordances
3.1. Phenomenological cases
Now that we’ve captured what imaginative affordances are we can consider whether they are something we perceive. Here we want to present a few cases that are readily described in terms of the perception of imaginative affordances. The case in favor of our perceiving affordances for bodily action often includes appeals to phenomenology. One good reason for thinking that we can perceive a ball as catchable, for instance, is noticing that catchability features in how we experience the ball. By the same token, we might also come to notice that we experience things as lending themselves to acts of imagination. Of course, first-person phenomenological claims are often contentious and thus worth supplementing with third-person theoretical considerations. We will start off by presenting a range of examples then move on to the theoretical considerations in the next sub-section.

One salient class of imaginative affordance present themselves in situations where it is difficult to discern an appropriate bodily action. This – in turn – pushes us to recreate or rehearse these actions via imagination. In his paper on ‘The Mental Affordance Hypothesis’ McClelland (2020) provides the example of someone traversing a series of stepping stones across a river. The agent takes the first few steps with ease but when the route gets more difficult she suddenly stops to mentally rehearse a viable path over the next stones, and only then executes the rehearsed action. McClelland suggests that the agent here perceives an affordance to imagine the next steps across the river. One reason for thinking that response is perceptual rather than doxastic is that this kind of response to one’s environment can be relatively insensitive to one’s beliefs. Even if she had earlier got the advice ”never stop and think” she would still involuntarily pause at the difficult point and mentally rehearse what to do next. This suggests that her actions are guided by her perception of the situation as opposed to any judgement she is making about how best to proceed.

To give other examples: when a skilled footballer is about to play the ball and the situation on the pitch is tangled, he is likely to first visualize the anticipated outcomes of the considered move based on what he sees around (such a visualization happens in a flash, obviously). When a chess player is about to make her move, she is likely to first mentally simulate the next possible moves on the chessboard based on what she perceives at one moment (Coates, 2013). The fluidity of such actions points to their being guided by perception rather than explicit deliberation. Neither the footballer nor the chess player need to decide that it would be a good idea to imagine the outcomes of their actions. Rather, they just perceive the situation as affording that imaginative act and perform the afforded action without needing to form judgements about the utility of such imaginings.
There are obviously more examples of situations when perceiving imaginative affordances is likely because performing bodily actions is tricky or problematic. We can now go beyond the cases of mental actions preceding (and actually serving) some bodily actions, and think of situations when bodily actions — although desirable — are unworkable or not preferred at some point by an agent. Consider situations where a desire for food can’t be satisfied. For instance, when we see that we cannot reach the desired apple hanging on top of the tree, we may nevertheless — guided by our hunger and the tempting appearance of the apple — imagine reaching the apple, grabbing it in our hand, and even eating it and tasting its juiciness. Furthermore, being on a diet, we may be disciplined enough not to eat the chocolate we see lying on the table, but may be unable not to imagine eating it and tasting its sweet flavour. Similarly, for someone trying to quit smoking, seeing a pack of cigarettes is likely to evoke the imagining of oneself having a cigarette. We can suppose that even if a cognitive behavioral therapist told such a person: “Do not even imagine yourself smoking when seeing a cigarette”, she would, nevertheless, find herself imagining the forbidden thing when seeing a ‘trigger’. Hence, as in the case of someone traversing the stones, the imagining here would be the result of what one perceives in the environment, not what one’s beliefs about what the best course of action is. Such “craving fulfillment” imaginative scenarios are easy to multiply and having such phenomenological experiences is rather common to most of us. We suggest framing these as cases in which the trigger in the environment is perceived as affording the relevant imaginative act. Just as we can see the apple as affording eating we can also see it as affording the imagining of eating; just as we can see any x affording the bodily act of φ-ing, we can also see x as affording the imaginative act of imagining-φ-ing.

This formula will easily apply to circumstances where someone has a rich history of interactions with a given type of object or situation. After all, there may be situations where performing bodily actions with x is not desirable at all but we may still find ourselves imagining φ-ing when we see x because of our past engagements with x. For example, for any musician who plays the piano seeing a piano is likely to trigger imagining herself playing it. The bodily action of actually playing the instrument might not be feasible and she might not want to perform at the time. But the musician’s history means the piano affords this imaginative act instead. The same will apply for other habitual uses of an object or tool (a welder, a camera, a tamper, a diving board, etc.). Perceiving this object or tool is likely to result in imagining using that object or tool. The same also applies to habitual actions in a given type of environment. Seeing a coffee shop can afford imagining going in and buying a coffee because of one’s history of actually performing that action.

Perhaps this kind of example lends itself to a phenomenal contrast case. Phenomenal contrast cases are pairs of experiences that differ only with respect to some target property. Siegel (2010) motivates the claim that the high-level property of being a pine tree figures in the contents of perceptual experience by comparing the experience one has of a pine tree before and after becoming an expert in spotting pines. The idea is that anyone who doesn’t countenance such high-level contents in perception would have real trouble explaining the difference between those two experiences. Equivalently, we can note that the pianist’s experience of a piano is different before and after they have learned their skills. We explain this in terms of their later experience including an affordance to imagine playing.
Any critic wanting to resist the perceptibility of imaginative affordances would have to offer a better explanation of this phenomenal contrast.

So far we’ve focused on perceiving things as affording the imagining of a bodily action. But there are plenty of other cases that don’t involve imagined bodily action. For instance, we may feel compelled to generate a sensory imagery of something when we perceive a kind of incomplete objects or situations. Consider cases of Gestalt incomplete/unfinished figures (Wertheimer, 1959). These objects seem to afford acts of ‘imaginative closure’ in which the figure is completed in imagination. For instance, when we see a gift box and hear a meow coming from it this affords imagining a cat in the box. And when we smell our friend’s perfume before we see her, this affords visualizing the friend. Or when someone skillfully mimes drinking from a cup we see an affordance to imagine a cup in his hand. In all of these cases it again seems that our imaginative actions are guided by what we perceive rather than some kind of judgement about the relevant imaginative act being apt. After all, in many of these cases the afforded imaginative act doesn’t help us in any given task. And the urge towards imaginative completion would plausibly persist in cases where our beliefs motivate us not to perform that imaginative act. For instance, if someone said “Please, do not yet think about what might be in your gift box. Wait until you open it!” it would be hard not to imagine the cat. This is readily explained in terms of the perception of imaginative affordances being relatively insensitive to our beliefs.

Another phenomenon that is readily described in terms of the perception of imaginative affordances is mind-wandering. In mind-wandering one’s stream of consciousness drifts away from deliberate engagement with a task. Many of the mental episodes that constitute a period of mind-wandering are imaginative episodes. Some mind-wandering is relatively detached from one’s environment: you might find yourself imagining your 80th birthday without any specific prompt from your surroundings.4 Other cases of mind-wandering, however, are more anchored in the environment. Irving and Glasser offer the following example:

Consider Darnell, whose mind wanders on the bus to work. He smells delicious coffee, then imagines eating breakfast, then sees an insurance advertisement and remembers to check for quotes, then laughs at a remembered joke. While Darnell’s mind wanders, he perceives stimuli in his environment: he smells coffee and sees an advertisement. (2019, p.2)

One way to make sense of this is in terms of the perception of imaginative affordances. When your mind wanders you are not intentionally controlling your mental actions. This opens the way for your mind to be guided by whatever affordances for mental action you perceive in your environment. Darnell perceives the coffee as affording imagining breakfast and, in his mentally disinhibited state, he then acts on this imaginative affordance. Over an extended period of mind-wandering you might engage in various unrelated imaginative acts prompted by your sensitivity to the relevant imaginative affordances.

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4 Metzinger (2017) seeks to explain such endogenous mind-wandering in terms of ‘cognitive affordances’. However, Metzinger is here adopting a conception of affordances that does not involve the environment.
Interestingly, Metzinger (2017) and Jorba (2020) also appeal to affordances to explain mind-wandering. On Metzinger's view, mind-wandering is the product of competing affordances for mental action that he calls ‘cognitive affordances’. He takes these affordances to be endogenously produced and describes an ‘inner environment’ of non-sensory states that create a ‘constant flow’ of possible mental actions. Similarly, Jorba suggests that when an idea emerges during a period of mind-wandering that idea can afford further reflection, perhaps because it is especially interesting. To account for exogenously produced mind-wandering episodes these accounts could be extended to encompass the cognitive affordances offered by the environment including its imaginative affordances. It might be something in your mind that affords imagining your 80th birthday but it is something in the environment that affords Darnell’s imagining of breakfast.

3.2. Theoretical considerations
3.2.1. Potentiation
Gibson’s concept of affordances was picked up by cognitive neuroscientists in the context of environmental stimuli automatically triggering motor responses. Seeing a teapot with its handle aligned with your right hand, for example, can activate the motor response involved in reaching out and grabbing the handle with your right hand. This is known as ‘potentiation’. One of the ways in which this effect manifests is through an ‘interference effect’ in which the presence of a task-irrelevant affordance can interfere with the performance of a task. In Tucker and Ellis’s (1998) classic study, participants had to categorize images as upright by pushing a button with their left hand or as inverted by pushing a button with their right hand (or vice versa in other trials). Features such as the handle of a teapot being to the left or right are irrelevant to the task. Yet the results showed that response time was faster when the teapot handle (or equivalent object feature) was on the same side as the correct button and slower when the handle was on the opposite side. This was taken to indicate that seeing the teapot as affording a right-handed grip, say, automatically triggered a right-handed motor response which, depending on the button required, either helped or hindered response time.

A crucial feature of this interference is that it occurs when subjects are presented with a task irrelevant affordance. But this doesn’t mean that potentiation is wholly independent of the task in which one is engaged. On Cisek & Kalaska’s (2010) ‘affordance competition hypothesis’ potentiation is influenced by numerous factors including the subject’s current task, their desires, their beliefs, their emotions and their habits. A subject’s wider mental states can thus influence whether their perception of a φ-ing affordance potentiates φ-ing

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5 Proust (2023) is another theorist who denies that cognitive affordances are perceived in the environment, instead regarding internal mental states as the bearers of cognitive affordances. Although Proust is concerned with meta-cognitive feelings rather than imagination, her conception of cognitive affordances comes close to that of Metzinger and of Jorba.

6 One complication here is that phenomenological considerations are needed to argue that our perception of affordances is phenomenal – i.e. part of our perceptual experience – rather than unconscious. If one were unconvinced by our phenomenological claims but convinced by the theoretical considerations below they might take the view that imaginative affordances are perceived unconsciously. Since we stand by our phenomenological claims this isn’t a possibility we’ll explore.
and how strongly this potentiation occurs. In this complex network of influences though, it is important that the potentiation occurring does not require one to intend to φ. This helps us to capture the different power that objects in our environment might exert over us. Scarantino (2002) considers how the probability of an action being performed varies between cases. He also considers ‘surefire’ affordances such that it is inevitable the subject will perform the afforded action.

Another crucial feature of potentiation is that it is not merely associative. It is not, for example, that teapots are associated with gripping response so that seeing a teapot potentiates gripping. The interference effect is more fine-grained than this: the response potentiated by the teapot depends on the orientation of the handle. An associative link between seeing an object as a teapot and a gripping response doesn’t explain why a left-handed response is potentiated rather than a right-handed response. But if the subject perceives the teapot as affording a left-handed grip then we get the explanation we need.

Seeing an affordance to φ can thus ready the act of φ-ing. But how does this help us when it comes to the perception of imaginative affordances? If we can find cases in which an imaginative response is potentiated by a stimulus, that would provide us with indirect evidence that the subject is perceiving the stimulus as affording imagination. Affordances for mental action have not yet been the target of empirical enquiry. Nevertheless, there are multiple studies of imagination that seem to show interference effects akin to those revealed by the Tucker & Ellis study. Besides helping with our positive case for imaginative affordance perception, such studies would help us rebut an objection to the Mental Affordance Hypothesis raised by Segundo-Ortin & Heras-Escribano (2023) who claim that there is insufficient empirical evidence to warrant the conclusion that we are sensitive to imaginative affordances.

Consider Samson et al.’s (2010) study that investigated how we imagine the perspectives of others. Participants were presented with an image of a room with dots on one or more of the walls. These images also depicted an avatar in the room who is facing toward one wall and away from the other. In ‘avatar-centric’ trials participants were asked to report how many dots the avatar could see. In ‘ego-centric’ trials participants were asked how many dots they themselves could see. Interestingly, response time was slower when the avatar couldn’t see all the dots. Why? It might be tempting to explain this in terms of participants having difficulty switching fully from one type of trial to the other. However, the study included a group of participants who only had to answer the ego-centric question. In this group the effect persisted with response time being slower in cases where an avatar is present that cannot see all the dots than in trials where no avatar is present.

7 One of Proust’s (2023) objections to the Mental Affordance Hypothesis is that a perceived object only potentiates a mental action if it is relevant to the subject’s interests. We agree that the potentiation of imagination depends on the wider mental states of the subject. However, on our conception this is consistent with saying that the perceived object is itself the bearer of the affordance.
In ego-centric trials the avatar is a task-irrelevant stimulus, yet whether the avatar could see all the dots effected participant performance. This can be explained in terms of the avatar affording the act of imagining how things look from their perspective. If what the avatar can see coincides with what the participant can see there’s no interference with performance. But if the avatar can see less than the participant, imaging how things are from their perspective slows down response time. Given the parallel between this study and the Tucker and Ellis study, we can reason that just as the interference effect of the teapot is explained by the potentiation of a gripping response after perceiving a gripping affordance so too the interference effect of the avatar is explained by the potentiation of an imaginative response after perceiving an imaginative affordance. Crucially, we have an imaginative response that isn’t straightforwardly explained by an associative link between seeing x and imagining y. The situation affords the fine-grained act of imagining what the avatar sees and the content of one’s imaginative act will depend on the details of the scene in which the avatar is present.\(^8\)

3.2.2. Action selection

The claim that we perceive imaginative affordances gains further support from considerations of utility. We have the capacity to perceive affordances for bodily action because it helps us in the task of action selection. Agents are constantly faced with the challenge of selecting what to do next. Affordance perception supports agents in this task by telling them what it’s possible to do in their current environment. By first perceiving a menu of options, we can then reflect on what our best option is. Moreover, insofar as perceptual processes filter what affordances we perceive, affordance perception can tell us what our most promising options are. Instead of perceiving all affordances in our environment we

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\(^8\) Here we contrast our affordance-based explanation of how certain situations can trigger imaginative actions with a hypothetical alternative explanation that invokes associations. Some may argue that a simple association between a stimulus and some other thing that is then imagined would explain the results without requiring perception of imaginative affordances. However, as we saw, some imaginative responses can’t be viewed as elements of an association i.e. as elements of a causal relation that is psychologically basic and context-insensitive (see Mandelbaum, 2022). It is not that seeing an object or situation x will always cause an imagining y by a subject S – as the explanation by associations would likely suggest. After all, even if someone has a strong associative link such as UMBRELLA/RAIN, one can still see in an umbrella an affordance to imagine that it is a sword in a pretence context. What is more, appealing to associations will not work for explaining how some imaginings may be triggered when perceiving new or unique objects and situations. The situation with the avatar, for example, is a complex stimulus that is not straightforwardly akin to any stimulus the participants would have seen before.
perceive a menu of options that fit with our goals, habits, emotions etc. which again aids us in the challenge of action selection.

Potentiation adds a whole other dimension to this. On the affordance competition model described above the environment potentiates multiple motor signals that then compete to determine behaviour (Cisek & Kalaska, 2010). Various factors (again including goals, habits and emotions) shape this competition meaning that the ‘winner’ is likely to be the optimal course of action. Here affordance perception underwrites a powerful mechanism of action selection.

How does this apply to the perception of imaginative affordances? For agents with mental capacities, the challenge of action-selection extends beyond selecting what to do with their bodies and into what to do with their minds. In particular, they face the challenge of working out when to use their imagination and what to imagine. Now, if we evolved a capacity to perceive affordances for bodily action to help us meet the challenge of bodily action selection, it’s credible that we would have evolved a capacity to perceive affordances for imaginative action to help us meet the challenge of imaginative action selection. To be clear, the argument is not ‘it would be useful to have evolved this trait therefore we did evolve this trait’. Rather, the argument is that we already know we perceive bodily affordances to help us with bodily action selection so, when faced with a parallel problem for imaginative action selection, it’s more plausible that we would have developed the same sort of mechanisms for confronting that problem rather than wholly different mechanisms. This at least puts the burden of proof on the sceptic to explain how selection of imaginative action works of not through perception of imaginative affordances and why we would have developed some alternative mechanism of action selection for imagination.

3.2.3. Misperception
A potential worry here is that imaginative affordances aren’t the kind of thing we can misperceive. If it seems possible for us to perform an imaginative act there’s no obvious way in which it could be wrong. This is worrying because many theorists build the possibility of error into their account of perceptual contents, so if it’s impossible to misperceive imaginative affordances then it’s impossible to perceive them at all. It’s also worrying because it is harder to see what function it would serve to perceive imaginative affordances if there’s no need to discern imaginative possibilities from imaginative impossibilities. What would it actually be to misperceive an affordance? Let’s look at bodily affordances first. When I see a waxwork apple as edible, I misperceive it because my bodily action (eating) cannot be completed successfully. Some elements of the execution may take place, however, for I can reach my hand towards the apple, grasp it, or even bite it! Only my efforts to successfully chew and ingest it will fail. We can say the same thing about imaginative affordances. Some imaginative actions are actually quite difficult to perform and may well go wrong. When, during a psychological test, I perceive an object as affording mental rotation, my performance of imaginative rotation may be faulty. Perhaps I succeed in the initial phase of turning the object in my mind but I soon lose the shape of the object and fail. The object was thus misperceived as affording mental rotation so the possibility of error is present.
While I execute some afforded imaginative action, many things can actually go wrong or diverge from my intention: I may be unable to maintain my imagining long enough, my sensory image may not be vivid enough, I may be poor at accurately imagining some parts of the target mental image, and so on. Thus, when I perceive an affordance for imagining, I may misperceive what's possible in various ways. What complicates the identification of imaginative affordance misperceptions, however, is that – unlike misperceiving bodily affordances – it can only be made “from the inside”, and it cannot be done by any external observer, or on the basis of any external cues (because even if we mention mental rotation tests or other imagination tests as a possible exception, no external observer will be able to tell whether a given person chose the correct answer only by chance). Still, it is one thing to say that misperceptions of imaginative affordances are difficult to notice, and another thing to say that such misperceptions are not possible. We agree with the former, but not with the latter.

3.2.4 Perceptual discernibility

Another issue worth raising here is how perceptual discrimination works in the case of imaginative affordances. When it comes to an object affording gripping for an agent, it is fairly easy to identify the visually discernible properties that are diagnostic of grippability – the object needs to have particular dimensions and there is no mystery about how the eye picks up on information about those dimensions that in turn reveals the object’s gripping affordance. What would then be the visually discernible properties that are diagnostic of, let’s say, imagine-ability? What exactly could the eye extract that would reveal what could be imagined of objects? It seems that possibilities for imagination aren’t the kind of thing you can see. Indeed, this is another objection to the Mental Affordances Hypothesis put forward by Segundo-Ortin & Heras-Escribano (2023). Still, no matter how puzzling this problem seems to be, here we want to argue that how objects and environments appear to us perceptually – so visually, audibly, tactiley, etc. – is still an essential component of imaginative affordances. To tackle this problem convincingly, we suggest that we could approach imaginative affordances in two ways.

First, we can talk about how imagination can be generally afforded by environments and objects. In this general sense every environment or physical object that is perceivable is also imagine-able (imagine-of-able, imagine-with-able, etc.), as everything that we perceive can be used as a source for our imaginative actions. That is, the very perceptibility of properties of objects, situations and environments make them good candidates for affording imagination. In general, we can say that all physical perceivable objects, environments or situations – in virtue of their having discernible elements and characteristics – can invite various imaginative actions, like the action of modifying those elements and characteristics, or adding some more elements that would align with the perceivable pieces somehow. What is more, we can claim that, generally, just on the basis of what we actually perceive we can be triggered to imagine some other objects, environments, or situations. Even in this last case, however, perceiving some actual physical things would be pivotal for such an imaginative transportation to happen.

Second, in any single case of imaginative affordance, we can speak about how imaginative action can be specifically afforded given the very particular properties of what is perceived. If we approach every possible case of imaginative affordance individually, it will be rather
easy to identify the perceivable features of objects or environments in virtue of which they lend themselves to specific acts of imagination. For example, in the case of imaginative completion above it is clear that perceptually categorizing the object as a gift box and the noise as a meow is what allows one to perceive it as affording the imagining of a cat in the box. To give more examples: when one hears that someone goes up the stairs and supposes that it might be one’s daughter, it is particular sounds of tramping and pattering allows one to perceive this particular imaginative affordance. When a chess player sees a particular arrangement of pawns on the chessboard she visualizes some of the possible next moves based on what she actually sees (so that if the arrangement was different the imaginative action afforded would also be different). In all these cases we can actually discern quite well what the perceptible diagnostic properties of objects and situations which make them potent triggers for imagination. Hence, examining imaginative affordances specifically, and not generally, should give us much better understanding of what we might actually perceive in the world when we perceive them.

Still, talking about what is perceptually discernible in case of imaginative affordances we can go beyond an overly conservative conception of perception. Perceptual content is rich and includes all sorts of properties that go beyond the surface appearance of objects. Besides seeing the apple as red and as smooth you see it as an apple – a high-level property that is not reducible to any shape, colour or texture properties. Furthermore, you can see it as edible – an affordance that is similarly irreducible to the surface features of the object. Seeing imaginative affordances is similar. When you see an umbrella as affording imagining it as a sword, the affordance it offers is not a categorical surface appearance property, but that in no way counts against our ability to perceive it. A critic would thus have to show that perceiving imaginative affordances would present a special problem of perceptual discernibility distinct from the tractable problems presented by other perceptible properties like high-level kinds and ordinary bodily affordances.

4. Applications: imaginative skills and tools
The concept of imaginative affordances is one that can be put to work in various ways. In this section we argue that the concept can be used to shed light on imaginative skills and imaginative tools.

Research into affordances centres around skill and its influence on perception. The skilled martial artist, for example, has learned to perceive affordances for bodily action that the novice cannot see. This skill thus embeds a perceptual skill. Might the same hold for imaginative skills and the perception of imaginative affordances? Recently, Kind (2022b) has raised the issue of the prospects of learning to imagine, showing that we can, indeed, reasonably talk about imaginative skills and look for ways to improve them. She herself indicated a few elements that matter for imagining well including appropriate manipulation of constraints (i.e. imposing or removing constraints, depending on our imaginative goals), exercise of combinatorial capabilities, experiential resources and the quality of mental imagery (i.e. its clarity, precision, force, controllability and accuracy). Based on these elements, she argues, we can then identify activities — like participation in improv games or engagement with literature — that are likely to improve our skill of imagination.
Perceiving imaginative affordances could be another element to be included on that list. Being able to respond imaginatively to one’s surroundings is integral to many professions such as artists, scientists, architects, designers, entrepreneurs and environmental workers. For instance, if an artist or designer sees an object, such as a flowerpot, and explores its (numerous!) imaginative affordances this could result in imagining some original modification of this object (e.g. this flowerpot being painted or sculpted as inverted or in surreal way). Similarly, an architect noticing an existing construction pattern could give her a spark to visualize new elements yet to be included in the construction. In fact, for any field of skilled activity coming across new imaginative affordances could contribute to success in that field. Just as we said earlier, there are a multitude of imaginative affordances in our environment just waiting to be noticed. The ability to perceive previously unnoticed imaginative affordances could definitely be an element of imaginative skill and could be integral to wider skills such as creativity, inventiveness and resourcefulness. That being so, enhancing one’s imaginative skills could involve enhancing one’s receptiveness to imaginative affordances. Imaginative skills thus plausibly embed perceptual skills.

Now, how could we practice such an ability? One way we suggest could be engaging in a sort of ‘alternative imaginings task’. This task is inspired by a classic alternative uses test of creativity designed by Guilford (1967), which relies on naming as many uses of an object (typically an everyday object like a teacup or a brick) as one can think of. This classic test design is often used not only for the purpose of assessing creativity but also for developing it, since practicing tasks like this can enhance one’s skill in so-called divergent thinking (Fasko, 2001). Where a test of this kind is done with a perceptually available object, performance will be linked to what bodily affordances one perceives (Glăveanu, 2012). After all, noticing that this thing affords a particular bodily action would then allow you to name a possible use of that object. But this could be extended to include imaginative actions too. Our version of the task would be: “What can you imagine when seeing this object (or these surroundings, or this situation)? List as many possibilities as you can think of (or as you want)”. This task aims at exploring the possibilities of imagining based on what one sees, and it is likely it can enable one to discover some new and surprising possibilities. We also expect that such a task can make one more perceptually attuned to the worldly offerings for their imagination. At least, we think it is a task worth trying for anyone looking to improve both their imaginative and perceptual skills, and worth checking out in the context of professional imagination and creativity training.⁹

Just as agents can be better or worse at perceiving imaginative affordances, objects can be better or worse at offering imaginative affordances. An immersive activity – such as an ‘escape room’ – can be evaluated in terms of how well it lends itself to imagining that you are actually in the relevant scenario. In design theory artefacts are often assessed in terms of how good their affordances are. A well-designed corkscrew has good affordances if agents can easily perceive what to do with it and easily put it to use. Design theorists generally focus on affordances for bodily action but the concept can be extended to imaginative affordances as well. An escape room can be evaluated in terms of how easy it is for users to perceive what they should imagine and how easy it is for them to then imagine it.

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⁹ This ties in with our on-going empirical work on imagination and affordances.
Or let’s consider activities of ‘make-believe’ which are ubiquitous and regularly involve the use of ‘props’ to aid the make-believe activity (Walton, 1990). When you use an umbrella as a sword, for example, you are using it as a prop in a game of make-believe. But why do we use the umbrella as a sword rather than using, say, a chair or a mug? Clearly the umbrella lends itself to this imaginative activity more than the other objects do. Or, put in our terms, the umbrella affords pretending that it is a sword in a way that the mug and chair do not.

Walton argues that our engagement with artworks is continuous with the kind of make-believe found in children’s games. You make-believe of a book that it is a real report of events, or make-believe of a sculpture of an animal that it is a real animal or make-believe of a play that it is the unfolding of real events. These props then afford acts of make-believe. If we are right, this is something that could be built into our perception of these props. We know how to use the props in make-believe because we perceive their imaginative affordances. And the props serve to coordinate shared activities of make-believe precisely because different people can see the same imaginative affordances in them.

Of course, make-believe is just one dimension of imagination. Similar conclusions can be reached about how artistic props afford acts of sensory imagination or supposition. A piece of music may be praised for the way it vividly invites the viewer to form certain visual images. A novel may be praised for the way it invites the reader to suppose an alternative future. Conversely, these artworks could be criticized for not lending themselves to the imaginative acts that they prescribe. Indeed, the well-explored phenomenon of ‘imaginative resistance’ (Moran, 1994) is readily described in terms of an artwork not affording the imaginative act that it prescribes. Where a work in fiction asks us to imagine that the actions of a tyrant are morally praiseworthy, for example, the work does not afford this imaginative act to us. The concept of imaginative affordances is thus a helpful evaluative tool for capturing important merits and flaws of artworks.

5. Conclusion
Objects or situations afford imagining for a subject when they make it possible for them to perform a specific imaginative action. Overall, there are good reasons to believe that we perceive such imaginative affordances. In a wide variety of cases, our first-person experience of how the environment prompts imaginative acts is plausibly described in terms of our perception of affordances-to-imagine. This encompasses affordances to form sensory imagery, affordances to suppose and affordances to pretend. Moreover, it encompasses more complex imaginative affordances that include multiple forms of imagination. Our characterisation of the examples offered gains further support from wider theoretical considerations regarding action selection and the potentiation of imaginative responses. The real value of our proposal emerges when the concept of imaginative affordance perception is put to work. Two promising applications are to imaginative skills – which

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10 This takes us into the topic of the normative dimension of affordance perception. Our perception of affordances favours affordances for socially acceptable actions (McClelland & Sliwa, 2022). There is a norm that says one should not even entertain the possibility of a tyrant being morally praiseworthy. The text may prescribe imagining this, but because the imaginative action deviates from engrained norms the text may not be experienced as affording that action by the reader.
plausibly involve learning to perceive imaginative affordances — and imaginative tools — which can plausibly be evaluated in terms of the imaginative affordances they provide. This is just a taster of the fruitful ways in which the concept of imaginative affordance perception can be applied to philosophical and psychological research on perception and imagination.

References