

# Perceiving Potentiality: A Metaphysics for Affordances

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## 1 Introduction

The notion of an affordance was first introduced by Gibson (1966) to refer to ‘what things furnish, for good or ill’ (Gibson 1966, 285), and more explicitly in Gibson 1986:

The *affordances* of the environment are what it *offers* the animal, what it *provides* or *furnishes*, for good or ill. The verb *to afford* is in the dictionary, but the noun *affordance* is not. I have made it up. I mean by it something that refers to both the environment and the animal in a way that no existing term does. (Gibson 1986, 127)

While the expression is introduced as a technical term, the phenomenon itself should be familiar. A surface that is knee-high and sufficiently steady affords sitting on (see Gibson 1986, 128); a roughly horizontal, flat, rigid, and sufficiently extended surface ‘affords support ... It is stand-on-able ... walk-on-able and run-over-able’ (Gibson 1986, 127); slopes ‘afford walking, if easy, but only climbing, if steep ... a slope downward affords falling if steep; the brink of a cliff is a falling-off place’ (Gibson 1986, 132). Various substances have ‘affordances for nutrition and for manufacture ... affordances for manipulation’, while other animals ‘afford ... a rich and complex set of interactions, sexual, predatory, nurturing, fighting, playing, cooperating, and communicating’ (Gibson 1986, 128).

It is of the utmost importance for the survival and thriving of animals, including human animals, that they recognize the affordances of their environment. But how do animals know what their environment affords them?

On orthodox views of perception, affordances are not the kind of thing that is perceived directly by an animal. On that orthodox view (which, of course, comes in many different forms), animals may be said to perceive *that* the surface in front of them affords walking or falling, but they do so indirectly: ‘the perception of

the affordances of objects is mediated by inference from prior detection of their shape, color, texture, or other such “qualities”.’ (Fodor and Pylyshyn 1981, 148) Gibsonian *ecological psychology* rejects this orthodox view as a symptom of a mistaken view of perception itself. To perceive, for ecological psychologists, is not to react to the input of light on our retina; rather, it is a matter of acting and moving in the world. The object of perception, that which an animal perceives directly, is not that which is projected by light rays onto our retina but that which is specified to active beings through their moving in the world, and that which is relevant to their actions. We see not just shapes and colours; we see, that is we directly pick up information about, our environment in all its glorious complexity, including what it affords us.

Recent action-based theories of perception agree that we perceive something like affordances, without committing to the full-blown Gibsonian programme (see Noe 2004, 103-106, Nanay 2013). Within a more standard representationalist approach (rejected by Gibson), for instance, Nanay has argued that the content of visual perception includes ‘action properties’, i.e., affordances (see Nanay 2011a, Nanay 2012, Nanay 2013; Nanay uses a different term to distance himself from some more esoteric views of Gibson’s, which I will ignore). Affordances have also been appealed to in philosophical projects besides action-oriented views of perception, for instance in defending intentionalism about perception (Prosser 2011) or formulating an account of emotions (Hufendiek 2016).

Why believe that we perceive affordances directly (i.e., rather than infer them from what we perceive)? The view certainly fits perceptual phenomenology: looking in front of me at my coffee cup, it seems I can see that the cup affords reaching, for instance, without any process of inference. Another argument appeals to evolution. It is reasonable to suppose that evolution has shaped perception in such a way as to be conducive to survival; and affordances, or action properties, are just what an animal needs to know about in order to survive and thrive (see Reed 1996, Nanay 2011a).

In this paper, I will not be concerned with the question whether we perceive affordances. I will simply assume that we do, and ask the further question: what exactly is an affordance? Gibson was somewhat evasive on this question (see Jones 2003, 112), but a number of different, competing views on the ontology of affordances have been formulated by ecological psychologists. In this paper I will answer the question by drawing on contemporary metaphysics. My answer will be one that can be classified, in the terms of the extant literature, as dispositional (see Turvey 1992 and Scarantino 2003 for predecessors). But by taking into account insights from contemporary metaphysics I hope to provide a much better and more flexible version of it. Moreover, my answer will link the metaphysics of affor-

dances to a movement in contemporary metaphysics that is, I believe, congenial to views of perception which stress our perception of affordances: anti-Humeanism.

Anti-Humean views in metaphysics are characterized negatively, by their deviating from David Lewis's highly influential doctrine of 'Humean supervenience': 'the doctrine that all there is to the world is a vast mosaic of local matters of particular fact, just one little thing and then another. ... For short: we have an arrangement of qualities. And that is all.' (Lewis 1986b, ix f.) More positively, anti-Humeans have been rehabilitating metaphysical concepts which from the Humean perspective are philosophically suspect and therefore in need of reduction. Dispositions, powers, or potentialities are a central case for such rehabilitation. Many anti-Humeans believe that they can be seen as basic and as providing accounts of other phenomena such as laws of nature (Bird 2007), modality (Vetter 2015), causation (Mumford and Anjum 2011b), and much else. In their different ways, anti-Humean views are often presented as reviving Aristotelian concepts (the concept of power or potentiality again providing a central case) that have been the subject of much scorn from the empiricist tradition which has been so prominent in the development of analytic philosophy.

If affordances are understood in such anti-Humean terms, then affordance-based theories of perception may join forces with the anti-Humean movement in metaphysics. Both sides stand to benefit.

Anti-Humean, irreducible dispositions have been suspect to many precisely because of their apparent resistance to empiricist epistemology (going back to Hume and his doubts about 'necessary connections'). Against this, anti-Humeans have been stressing the explanatory power of dispositions: taking them as basic, we can explain a great deal of phenomena. A dispositional theory of affordances contributes to the anti-Humean project by, first, dispelling empiricist worries: our knowledge of dispositions has a solid empirical basis in perception itself. It contributes, second, by adding another area where dispositions are explanatory: besides laws, modality, and so forth, we can also better explain the content of perception by appeal to dispositions.<sup>1</sup>

Affordance-based theories of perception, on the other hand, may benefit from a connection with anti-Humean metaphysics in two ways. First, and very simply, they can rely on an independently motivated metaphysics that makes affordances not some special assumption of a very specific theory of perception, but something whose existence we have independent grounds to believe in. Given their shared rejection of the classical empiricist tradition and sympathy for a more Aristotelian-inspired view of the world ('At the ecological level Aristotle was right. And it is

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<sup>1</sup>In what follows, I will often speak of the content of perceptual experience; but what I say should be equally compatible with a Gibsonian or otherwise direct view of perception.

at this level ... that we *perceive* the world', Gibson 1986, 99), anti-Humean metaphysics seems a natural fit for theories of affordance perception. Second, as I will show in section 6 below, the seemingly competing views of affordances can be systematically connected and together account for the different roles that affordances play.

In arguing for a dispositional account of affordances, however, I will do no more than provide the *genus* for a full-blown definition of affordances: I argue that affordances are a kind of dispositions, and I say something about the dispositions that they are a kind of. I will not provide a full analysis or theory of affordances; some of the reasons for my reluctance should emerge from section 6. My aim is to provide a metaphysical framework within which more detailed questions about affordances can be asked.

I will proceed as follows. Section 2 gives four desiderata on any account of affordances, which will guide and support my argumentation in what follows. Section 3 gives an outline of the anti-Humean view of dispositions that I want to use in formulating an account of affordances, and highlights the aspects that we will need. Sections 4-6 put the two together and argue that the view of dispositions developed in section 3 accounts for the desiderata in such a way that we have good reason to adopt it.

## 2 Affordances

I suggest that the following are legitimate desiderata on any theory of affordances, in the sense that a theory ought to be able to satisfy, and ideally explain, each of the following observations.

To begin with, affordances – or rather, the objects that have them – *afford* certain actions and events. How are we to capture this notion of 'affording'? An affordance must at least entail the possibility of what is being afforded. When a chair affords sitting on, it is *possible* to sit on that chair; when a cliff affords falling-off, it is *possible* to fall off that cliff, and so forth. Affordances are sometimes expressed with the possibility suffix '-able': the chair is sit-on-able, the cliff is fall-off-able, and so on.

Thus we have:

**(A1: Possibility)** Affordances entail real possibilities.

(A1) is, I think, uncontroversial, but it is underspecified. For one thing, it is silent on whether the affordance *is* or *merely entails* a possibility. For another, it does not fully the kind of possibility that is entailed. Without going into too much

detail on this second point, we can at least make a few negative remarks. The possibility entailed is stronger than mere logical or metaphysical possibility: a stair's being climbable, for instance, entails more than the mere metaphysical possibility of one's climbing it. The possibility entailed is, as (A1) says, a kind of *real* or objective possibility (see also Turvey 1992, 174): it is not epistemic possibility (possibility relative to our knowledge) or doxastic possibility (possibility relative to our beliefs), or anything of the kind. It is the kind of possibility that provides us with real options for acting in the world. In linguistics, this kind of possibility is often called 'circumstantial' (Kratzer 1991) or 'dynamic' (Portner 2009). Finally, (A1) does not entail what the entailed possibilities are possibilities *for*. Suffice it to say for the moment that typically they are possibilities for acting. I will return to this point in connection with desideratum (A3).

Let me note a related point that I do *not* take to be a desideratum on an account of affordances: I do not take it to be a requirement that affordances entail anything of a normative nature, a 'solicitation', an 'invitation', or a 'mandate' to do what the thing affords doing. (Again, I am siding with Gibson here: cf. Gibson 1986, 138f.) To borrow a term from Susanna Siegel, I am not concerned with 'soliciting affordances' (Siegel 2014). Siegel illustrates the distinction with an example: in a conversation, I might see a tuft of hair that has fallen over someone's eye. Now I may simply perceive that tuft of hair as something that affords moving aside, thus providing eye contact; or I may, in addition, feel prompted to move it aside and establish eye contact. The first is an example of perceiving a *mere affordance*, the second of perceiving a *soliciting affordance*. Since not all affordances are soliciting affordances (see, again, Gibson 1986, 138f.), I take it that mere affordance is the basic notion. Hence I am here concerned only with mere affordances.

The possibility entailed by an affordance must be of an objective kind, then; and the same goes for affordances themselves:

**(A2: Objectivity)** Affordances are objective features.

Affordances are there to be perceived, but their *being* is quite distinct from their *being perceived*. Gibson insists on this point (Gibson 1986, 129; see also Michaels 2003, 136f.), and it is central to the idea that we gain information about the world in terms of affordances.<sup>2</sup>

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<sup>2</sup>It is sometimes claimed that affordances 'cut[...] across the dichotomy of subjective-objective' (Gibson 1986, 129). When spelling out the supposed subjective aspect of affordances, however, theorists generally point out that 'affordances are properties of the environment taken with reference to an individual' Heft 1989, 3). The allegedly subjective aspect of affordances is just their relationality, as highlighted in (A3) below. I find it unhelpful to use the terminology of objective/subjective here. Note, by the way, that (A2) is not intended to exclude the existence of *social* affordances, which are in some way mind-dependent *qua* social. The point of (A3) is merely to stress that the affordance is independent of anyone's perception of it.

(A2), too, is underspecified: we might ask, affordances are objective features *of what*? The answer to this question is a matter of debate. Some (e.g. Turvey 1992, Scarantino 2003, Reed 1996) believe that affordances are features, or properties, of the objects in an animal's environment. Others (e.g. Chemero 2003, Stoffregen 2003; Prosser 2011) hold that they are features of, or relations between, the animal itself and (objects in) its environment. We will discuss this in some detail below in section 6.

(A2) precludes that affordances depend on an animal's perception of them, in the way that secondary qualities are often thought to depend, in some fashion, on observers' perception. (A2) does not, however, preclude that affordances are relative to animals in some other way. Indeed, a chair is not sit-on-able *simpliciter*: it affords sitting on to an adult human, but not to an infant or a snake. A cliff is not fall-off-able *simpliciter*: it affords falling off to animals, such as ourselves, that require a supporting horizontal ground, but not to a bird. This was noted by Gibson already in introducing the term 'affordance': 'I mean by it something that refers to both the environment and the animal in a way that no existing term does.' (Gibson 1986, 127)

How does an affordance 'refer' to an animal? In the case of climbability, an animal's leg length will play a role, but in many other cases – such as affordances for nutrition, for social interaction, etc. – it will be more difficult to give quantitative measures. Moreover, even when quantitative factors such as leg length play a role, we will still need to take into account the animal's abilities, skills, and dispositions: a stair will not afford climbing to a human, even with the right leg length, if she is unable to lift her legs. Affordances must thus be relative *at least* to the animal's capacities and dispositions. In general, affordances are 'relative to what an individual can do' (Heft 1989, 11; see also Basingerhorn et al. 2012, Rietveld and Kiverstein 2014, Noe 2004, 105f.).

Our third desideratum is thus as follows:

**(A3: Relativity)** Affordances are always affordances *for* animals' acting on, being acted on by, or interacting with, their environment; accordingly, whether or not an affordance is present depends (in part) on features of the animals, including their abilities and dispositions.

Like (A1) and (A2), (A3) is left intentionally underspecified. Do affordances depend on, are they relative to, an individual animal? This is sometimes called the *mutualist* approach. Do they depend on an entire population? This is the *selectionist* approach, which links affordances closely to natural selection (Reed 1996). Or do they depend merely on there being some animals or other with the relevant abilities, without being relative to any one or any group of them? We will see that

this is a second crucial decision point for a metaphysics of affordances, besides the question what affordances are features of. We will discuss this, too, in some detail below.

Let me note again some related points that I do *not* take to be required from a theory of affordances. First, I do not require that the animal mentioned in (A3) is identical to the animal that perceives the affordance. Some empirical work (reviewed in Basingerhorn et al. 2012) suggests that we can perceptually judge affordances for others. However, nothing will depend on this in what follows, as I will focus only on cases where an animal perceives what the environment affords to it. Second, I do not require that affordances involve a first-personal element for the perceiving animal, as is sometimes suggested (Tillas et al. 2016). That element, if it is present, should be part of *how* we perceive affordances, not of *what* we perceive, i.e. the affordances themselves. Third, I do not require that all affordances are affordances for action: the examples that I have given strongly suggest that affordances can be related to an animal's *doing* (sit on a chair) or to something *happening* to the animal (fall off a cliff). However, as is usual, my main focus will be on action-affordances.<sup>3</sup>

Finally, affordances are part of a theory of perception, and must therefore be the kind of thing that can be perceived:

**(A4: Perceivability)** Affordances must, at least in principle, be perceivable, and must be that which is perceived in paradigmatic cases of successful affordance perception.

Affordances must in general be the kind of thing that an animal could perceive, or else our very motivation for stipulating affordances vanishes. More specifically, they must (at least typically) be that which is perceived in the paradigmatic cases of affordance perception – when an animal perceives a stair as climbable, a fruit as edible, and so forth.

(A4) does not, however, require that every affordance be detectable. Some affordances may be hidden from animals, but given our desideratum (A2) it should not follow that they aren't there. Nor does (A4) require that affordances must be perceivable in the sense of being that which stimulates our sense organs – in visual perception, what stimulates the retina. Friends of affordances have rightly been careful to avoid such a commitment, and have distinguished between what stimulates the sense organ and what is perceived (see Gibson 1986, 53, Nanay 2011b). According to Gibson, affordances are perceived directly in the sense that they are

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<sup>3</sup>Turvey 1992 suggests that we focus on affordances for action as the central case; Michaels 2003 argues that there are only affordances for action, while Scarantino 2003 gives an account for both action-related affordances and happening-related affordances.

among the information we pick up from the ‘ambient array’ of light. According to others (e.g. Nanay 2011a, Nanay 2011b, Prosser 2011), affordances are perceived in the sense that they are part of the content of perceptual experience. I will not make any specific assumption about the nature of affordance perceptions, except that we do perceive (and not just infer) them.

So much for the desiderata. I take (A1)-(A4) to be uncontroversial (among friends of affordances, that is). I have taken care to formulate my requirements in such a way as not to prejudice issues of the ontology of affordances. One standard categorization of views on the ontology of affordances is threefold (see, e.g., Chemero 2003). On the *dispositional* view (defended by Turvey 1992 and Scarantino 2003), affordances are dispositional properties of the objects in an animal’s environment that are in some way relative to the animal. On the *relational* view (defended by Stoffregen 2003 and Chemero 2003), affordances are relations between the animal and objects in its environment. And on the *selectionist* view (defended by Reed 1996), affordances are properties of objects in the environment (nothing is said on whether or not they are dispositional), which are relative not to individual animals but to entire populations.

Our four desiderata and the questions that they leave open provide a framework that helps us categorize these accounts of the ontology of affordances.

Our desideratum (A2) required that affordances are objective features; but it left open what they are features *of*. According to both the dispositional and the selectionist view, affordances are (unary) properties of objects in the animal’s environment: they are properties of a stair, a cliff, or an entire ecosystem. According to the relational view, affordances are not (unary) properties, but are rather relations between the animal itself and the objects in its environment. When a stair affords climbing to an animal, on this view, that is not a property of the stair but rather a relation that holds between the animal and the stair.

Our desideratum (A3) required that affordances are relative to animals; but it was left open which animal or animals the affordance is relative to. According to both the dispositional and the relational view (as they are formulated by their proponents), an affordance is considered relative to a particular animal: the stair is climbable for *me*, but not for my toddler. On the selectionist view, affordances are considered relative not to individual animals but to entire populations (which consist of an ever-changing group of individual animals).

Although this is not often noted in the discussion, there is also some disagreement surrounding our desideratum (A1). Affordances, everyone agrees, entail (real) possibilities. But dispositional views tend to associate them with something stronger: a kind of conditional necessity (Turvey 1992, 178) or at least a counterfactual conditional (Scarantino 2003). Others disagree and insist that possibility is

all that an affordance entails (Stoffregen 2003, 119). We will discuss this in some detail in section 4.

### 3 Dispositions

Dispositions are properties such as fragility, solubility, flammability, and so on; they are properties that can manifest themselves – in our examples, by an object’s breaking, dissolving, or bursting into flames – but which can also be instantiated without being manifested. Dispositions are often contrasted with so-called *categorical properties*, standard examples of which are shape properties (roundness) and composition properties (being made of H<sub>2</sub>O). Such properties, it seems, do not come with an inbuilt distinction between instantiation and manifestation.

Are there really both kinds of properties, categorical and dispositional? According to categorical monists (e.g. Prior et al. 1982), there are only categorical properties, and ‘dispositional’ is a label best applied only to predicates. According to dispositional monists (sometimes called ‘pure powers theorists’ or ‘pandispositionalists’; e.g. Bird 2007, Mumford and Anjum 2011b), there are only dispositional properties, and that ‘categorical’ is a label best applied only to predicates. Between these two extremes, there is a variety of views, including the dualist view (e.g., Molnar 2003 and Ellis 2001) according to which there are both categorical and dispositional properties, and neither can be reduced to the other; and the dual-aspect view (sometimes called ‘powerful qualities theory’, e.g. Martin 2008, Heil 2010, Jacobs 2011, and Jaworski 2016) according to which every property is both dispositional and categorical. For my purposes, it does not matter *which* of these views we adopt, with one exception: I will, for obvious reasons, proceed on the assumption that there are *some* dispositional properties, and hence that categorical monism is false. My claim will be that affordances are among those properties.

But not every view of dispositions will do equally well in accounting for affordances. In this section, I will outline three theses or commitments on dispositions that I take to be well-supported (but by no means uncontroversial), and which will turn out to be particularly suited for an account of affordances. While these three commitments do not together amount to a full-blown theory of dispositions and can be shared by a number of more specific views, they are characteristic of a view of dispositions that I have argued for at length in recent work (Vetter 2015), and I will rely heavily on my earlier work in spelling them out, but will point out along the way other views that share individual commitments. Since I have used the term

‘potentiality’ in the earlier work that I will rely on, I will refer to the conjunction of the three commitments as the ‘potentiality view’ of dispositions.<sup>4</sup>

We can start with the observation that dispositions are modal properties. They are modal, that is, they concern what objects can do or would do – whether or not they ever actually do it. In addition, however, they are properties: they belong to particular objects, to which they are often intrinsic; they are not just modal facts about the world in general.

To say that dispositions are modal is underspecified. Modality comes in different strengths or *modal forces*, from possibility to necessity. A special case is the counterfactual or subjunctive conditional, which has the modal force of a variably strict necessity (in all the closest worlds where its antecedent holds, its consequent holds too).

What is the modal force of dispositions? The standard conception of dispositions has it that it is that of a counterfactual conditional. A disposition, such as fragility, is characterized by two elements: a stimulus condition, such as being struck, and a manifestation, such as breaking. The modality of a disposition is then that of counterfactual conditional linking these two elements: a fragile object is one which would break, at least *ceteris paribus*, if it were struck. According to the *simple conditional analysis*, this is how it is for every disposition: we can characterize, perhaps even analyse it, in terms of a single suitable conditional. The simple conditional analysis is notoriously subject to counterexamples, and has many more complex descendants.<sup>5</sup>

An alternative view says that the modal force of dispositions is that of *possibility* (Vetter 2015, ch.3, Vetter 2014, Lowe 2011, Aimar 2018; a similar view, with a modality stronger than mere possibility but also distinct from a counterfactual, is defended by Mumford and Anjum in their Mumford and Anjum 2011a, Mumford and Anjum 2011b, and Mumford and Anjum 2018). There are a number of reasons for preferring such a view. One reason is linguistic: we typically express dispositions with terms that are compositionally formed from a verb (expressing the disposition’s manifestation) and a suffix such as ‘-able’ (expressing possibility: see Kratzer 1981, Kratzer 1991). It is unclear how we should express with such a construction anything other than the possibility of a disposition’s manifesting. Secondly, for many dispositions we are unable to formulate a clear-cut stimulus condition to serve as the corresponding conditional’s stimulus condition: what, for instance, is the stimulus condition of loquacity or spontaneity? (See Manley and Wasserman 2008, 72.) Again, it seems that the possibility of a disposition’s man-

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<sup>4</sup>Readers interested in an overview of the literature on dispositions are referred to Choi and Fara 2012 and Cross 2012.

<sup>5</sup>See, for instance, Martin 1994, Lewis 1997, Bird 1998, Manley and Wasserman 2008, and Steinberg 2010.

ifesting, which sidesteps any questions about stimulus conditions, is better suited to deal with such cases. A final reason concerns the gradability of dispositions (see Manley and Wasserman (2007), Manley and Wasserman (2008)). Dispositions are not on/off conditions, but counterfactual conditionals can only be true or false. We can, however, think of possibility as gradable: some things are more easily possible than others (see Vetter 2014, 137-143). Dispositions, on this view, are akin not to counterfactual conditionals but rather to a sufficiently *easy* possibility of the disposition's manifesting.<sup>6</sup> A consequence of the view is that there is no sharp cut-off between a disposition and a mere possibility: there is a continuous spectrum of ever-decreasing fragility from a fragile glass all the way to a robust rock. It is not clear, and it may be settled differently in different contexts, where on that spectrum the cut might take place between the fragile and the non-fragile things. At the lower end of the spectrum (the rock, say), we are dealing with little more than the mere possibility of breaking. A realist dispositional metaphysics, I argue (Vetter 2015, 79-84), must include even the lowest degrees. The property that covers the whole spectrum of such degrees I call a *potentiality*. Thus we might not call a rock fragile, but since it, too, can break, it shares with a champagne glass the potentiality to break. The modality that characterizes such a potentiality is simply real possibility, in the sense discussed above in section 2: an objective kind of possibility that is based on how things are, not on what we think or know about them. As with affordances, however, full-blown metaphysical possibility seems too weak to characterize a disposition. Typically, the possibility in question will be nomological possibility restricted by the intrinsic make-up of the object in question: it is (sufficiently) possible, given the laws of nature and the glass's molecular constitution, that the glass breaks. (For more details, see Vetter 2014 and Vetter 2015, ch.3.)

In what follows, I will use the terms 'potentiality' and 'disposition' interchangeably, whenever it is clear that we are adopting the potentiality conception of dispositions (note that this differs from my usage of the terms in Vetter 2015). Here, then, is the first commitment of the potentiality view:

**(P1)** Dispositions/potentialities are characterized not by counterfactual conditionals, but by (graded) possibility.

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<sup>6</sup>Manley and Wasserman account for gradability in terms of proportions of conditionals: something *x* is more fragile than *y*, for instance, if more conditionals of the form 'if *x* were struck in such-and-such a precise way, then *x* would break' are true than corresponding conditionals for *y*. See Vetter 2011 for an argument that this view very nearly collapses into my own, and that mine is preferable for being more unified. Lowe (2011) and Aimar (2018) offer possibility views that do without graded possibilities.

Whether we focus on counterfactuals or possibilities, though, the possession of a disposition cannot just be equated with any modal fact. Dispositions, as I said above, are modal *properties*: they are a matter of how things stand with particular objects. This is why the truth values of disposition ascriptions and their corresponding modal statements – be they conditionals or easy possibility statements – can come apart: a glass that is safely packed in bubblewrap remains fragile although it is not true that it would break if it were struck, and it is also not true that it can easily break. The glass remains fragile because fragility is a matter of its intrinsic constitution, which is not changed by surrounding it with bubblewrap.

In the Humean tradition, the ‘propertyhood’ of dispositions has been understood in terms of the object’s having a *categorical basis* for the disposition: a categorical, that is, non-modal property that grounds the disposition. Thus it has been said that an object is fragile iff and because it has a categorical property, a certain crystalline structure, such that in possible worlds where the object retains this property and is struck, it breaks; or (to adopt the possibility view of dispositions) such that in sufficiently many possible worlds where the object retains this property, it breaks (Vetter 2014). On such a view we can distinguish between what makes a disposition a property of an object – its categorical basis in that object – and what makes it dispositional – the link to a modal truth, be it a counterfactual conditional or a possibility. We can call the view *reductionist*, since it reduces dispositions to a combination of non-modal properties and non-propertyed modality.

However, this view has come under attack more recently from the side of anti-Humean metaphysics. If (some or all) fundamental properties are dispositional, as Bird (2007) argues, then there are dispositions without a categorical basis. And if that is so, we might reject the Humean framework in metaphysics quite generally and simply take dispositions, or potentialities, at face value: as properties that are, at the same time, modal. We might still think that dispositions are partly grounded in certain categorical properties (see Bird 2018, Vetter 2018). But on the view offered here, we can think of fragility, say, as a property in its own right, not a fundamental one, but a *bona fide* property not in need of reduction to a modal and a categorical element. Importantly, on such an *anti-reductionist* view, we have no need of reducing dispositions to a categorical basis plus a modal truth. Elsewhere (Vetter 2015), I have suggested that it is potentiality that gives rise to modality, not vice versa; but we need not be concerned with this claim here.

I will assume, thus, a view of dispositions as a kind of potentiality, and of potentialities as irreducible possibility-like properties of objects, a kind of ‘localized possibility’ (Vetter 2015, ch.1). This is the second commitment of the potentiality view:

**(P2)** Dispositions/potentialities are properties which are not reducible to (categorical) properties plus some modal fact; they irreducibly involve modality.

(P2) is independent of (P1). It is shared by many anti-Humeans with diverse overall accounts of what dispositions are, and is meant to be neutral between them.

There is one last point that requires clarification. We saw above that dispositions, such as fragility, are typically intrinsic properties of their possessors. Typically, but not always: McKittrick (2003) has shown that there are many examples of extrinsic dispositions. A property is intrinsic, roughly, if its instantiation does not depend on anything outside the instantiating object; a property is extrinsic, roughly, if its instantiation does depend on how things stand outside the instantiating object. Extrinsic properties can, in principle if not always in practice, be lost and gained without changes in the object that loses or gains them. The extrinsic dispositions that McKittrick has pointed out include a key's power to open a particular door, *d*: whether or not the key instantiates this disposition depends not only on its intrinsic constitution, but also on the existence of *d* and the shape of *d*'s lock. Change *d*'s lock, or destroy *d*, and the key will lose its disposition without undergoing intrinsic change. Another example of McKittrick's is recognizability: whether or not a person is recognizable depends not just on their intrinsic features, but on the mental states and recognitional capacities of other people. Bill Clinton's being recognizable depends on people distinct from Bill Clinton himself. Erase all memory of him, and he will cease to be recognizable without undergoing any intrinsic change.

It will be useful for our purposes to distinguish between several subtly different but closely related dispositions or potentialities.

First, there are the *intrinsic* potentialities that the different objects bring to the table: the key has an intrinsic potentiality to open doors with such-and-such shape of locks, the door a potentiality to be opened by such-and-such shaped keys. Neither of these potentialities requires the existence of an actual door or key with the right lock or shape. But the potentialities, like the key and the lock themselves, can be seen to 'fit' each other, much like the water-solubility of salt and the dissolving power of water fit each other. Some philosophers have called such intrinsic dispositions that fit each other 'partner powers' or 'reciprocal disposition partners' (see Martin 2008, Mumford and Anjum 2011b, Martin 1998, Lewis 1997<sup>7</sup>); for the sake of coherent terminology, I will call them 'partner potentialities'.

Second, when two (or more) objects have fitting partner potentialities, then *jointly* those objects have another potentiality. Thus the key and the door together have a potentiality for the one to open the other, the water-and-salt for the one to

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<sup>7</sup>Many of them correspond to the old Aristotelian idea of active and passive powers, but the classification into active and passive has largely disappeared.

dissolve in the other, and Bill Clinton and a given group of people have a potentiality for the one to be recognized by the others. Each of these potentialities is an intrinsic property, but of a larger system; I call them ‘joint potentialities’ (Vetter 2015, 105-122). Joint potentialities are best thought of as relations between (or alternatively, as plural properties of) several objects together, e.g., the key and the door. No one of the participating objects could have such a potentiality on its own. This is how joint potentialities differ from, although they are generally grounded in, partner potentialities: the partner potentiality can, but the joint potentiality cannot, be possessed by any one of the relevant objects individually, and even in the absence of a suitably related potentiality.

Finally, the *extrinsic* potentialities pointed out by McKittrick can be seen to be closely related to joint potentialities. In general, relations or plural properties give rise to or fully ground certain extrinsic properties: e.g., Theresa May’s having the extrinsic property of being UK Prime Minister (as of November 2018) is grounded in the various relations in which she stands to the people and institutions of the United Kingdom. Likewise, joint potentialities give rise to or fully ground extrinsic potentialities: e.g., the key’s potentiality to open door *d* is fully grounded in its joint potentiality with *d*; Bill Clinton’s recognizability is fully grounded in his joint potentiality with any large enough group of people. (See Vetter 2015, 133.<sup>8</sup>) But we can note a difference between the two cases (not discussed in Vetter 2015). There is no other joint potentiality that the key’s extrinsic potentiality could be grounded in: it must be a joint potentiality with *d*. But there are many other joint potentialities that Bill Clinton’s recognizability could be grounded in: it does not matter *which* group of people it is possessed with. Hence there is an object, door *d*, such that the key’s extrinsic disposition depends on *it* (*de re*: the existential quantifier takes scope over the dependence predicate); but Clinton’s recognizability depends only on *there being* something or other of the right kind with which he has a suitable joint potentiality (*de dicto*: the dependence predicate takes scope over the existential quantifier). I will refer to these two different kinds of extrinsic potentiality as *de re*-extrinsic and *de dicto*-extrinsic potentiality, respectively.<sup>9</sup>

This is the third commitment that I take from the potentiality view of dispositions:

**(P3)** Dispositions/potentialities can be

- (a) intrinsic dispositions/potentialities of individual objects that have partner

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<sup>8</sup>Molnar (2003) also recognizes such joint potentialities but argues that they obviate the need to stipulate extrinsic potentialities.

<sup>9</sup>An anonymous reviewer suggested renaming them as *specific* and *generic* extrinsic potentialities. I have not followed the suggestion because, as we shall see below, the term ‘generic’ already has a use in the affordances literature. But if the alternative terminology helps, the reader is invited to substitute ‘specific’ for ‘*de re*’ and ‘generic’ for ‘*de dicto*’ in what follows.

potentialities in the intrinsic dispositions/potentialities of other objects;  
(b) joint dispositions/potentialities of several objects taken together; or  
(c) extrinsic dispositions/potentialities of individual objects which fully depend, either *de re* or *de dicto*, on the object's having joint potentialities together with other objects.

(Note that the distinction between (a)-(c) is not meant to be exhaustive of all dispositions/potentialities.) Again, this commitment seems independent from the two previous ones. Although the three-part distinction that I will be using is from my Vetter 2015, talk of partner powers or dispositions is pervasive in the literature on dispositions (as evidenced by the – incomplete – list of references given above).

We now have all the materials that we need in order to apply the current view of dispositions to an account of affordances. In the following sections, I will use these to support a potentiality-based view of affordances. Section 4 will provide a preliminary case that affordances are potentialities based on desideratum (A1), the fact that affordances entail possibilities. Sections 5 and 6 will strengthen that case by arguing that affordances cannot be the categorical basis of their associated dispositions, and should be understood anti-reductively (section 5); and that affordances are indeed properties in the sense required for potentiality (section 6). Taken together, the arguments support the view that affordances are irreducible modal properties, with the modal force of possibility – that is, that they are potentialities.

## 4 Possibility and a Preliminary Case for the Potentiality Thesis

In this section I begin my argument for the Potentiality Thesis:

**Potentiality Thesis** Affordances are (a species of) potentialities,

where potentialities are dispositions as understood by the potentiality view (i.e. satisfying (P1)-(P3)).

In this section, I begin with some preliminary evidence based on desideratum (A1): affordances entail possibilities.

According to the existing dispositional views of affordances, affordances entail something stronger than just possibilities. Turvey (1992) holds that affordances are a kind of dispositions. He also assumes that dispositions 'never fail to be actualized when conjoined with suitable circumstances' (Turvey 1992, 178), and hence are akin to a kind of conditional necessity. The same, then, must hold for affordances. In a more recent dispositional account of affordances, Scarantino (2003)

relies on a conditional analysis of dispositions. Thus for him, an affordance entails a counterfactual conditional – roughly, an object affords something M to an animal just in case, were the right stimulus conditions to obtain, M would come about with a certain positive probability (see Scarantino 2003, 956).

Stoffregen (2003) objects against Turvey's account precisely on the basis that it gets the entailed modality wrong:

Animate events (e.g., pounding on tables, reading, stealing candy) differ from inanimate events (e.g., the refraction of light by crystals) in that they are not obligatory. For living things, the conjunction of particular properties of the animal with particular properties of the environment does not lead to the involuntary actualization of the action afforded. Affordances are what one can do, not what one must do. (Stoffregen 2003, 119)

(See also Chemero 2009, 145, 190.) Now, the dispositionalist can respond by agreeing with Stoffregen (and Chemero) about affordances but disagreeing with Turvey about dispositions. It is often held that dispositions need not be (what is sometimes called) surefire: they need not be such that they *must* be manifested under certain conditions. This is noted explicitly by Scarantino (2003, 959f).<sup>10</sup>

But there is more to Stoffregen's objection. As Stoffregen points out, we don't want affordances to be actualized involuntarily given certain external conditions, even when that actualization is not 'surefire' but only has a certain probability.

Again, the dispositionalist seems to have an easy way of responding. We have not yet characterized the stimulus condition of the relevant dispositions (the dispositions that are to be identified with affordances). There is no reason why they would have to be construed so as to make the manifestation of the disposition involuntary. Why not say that the relevant stimulus condition consists in the animal's intending, choosing, or wanting to perform a certain action? Thus a climbable stair would be one that the animal would climb if it tried to climb it, a graspable object one that the animal would grasp if it tried to grasp it, etc. Such a strategy would closely parallel dispositional approaches to abilities, which think of abilities roughly as dispositions to do something when wanting, choosing, trying or intending to do it. It would thereby capture the close relation between affordances of objects in the environment, on the one hand, and abilities of animals on the other – the two are reciprocal partner dispositions, or 'complementary' (Turvey 1992).<sup>11</sup>

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<sup>10</sup>Not everyone agrees that dispositions need not be surefire. But I will not pursue the point since I am about to raise a different objection.

<sup>11</sup>Proponents of the dispositional view of abilities include G.E.Moore 1911, Vihvelin 2004, Fara 2008; for criticism, see Clarke 2009, Whittle 2010, and Vetter 2016.

However, such a construal makes the modal force of affordances still too strong. An object of the right size affords grasping to an infant, but most of the infant's attempts to grasp it will fail; it is not such that, interferences aside, the infant would grasp it if it tried. A female of a species may afford mating to a male, or nourishment to an infant, but she may not be disposed to yield either to the male intending to mate or to the infant trying to feed itself. We might try to remedy this by qualifying the stimulus: perhaps the disposition in question is a disposition to be grasped by a *suitable* animal, i.e. not a newborn; or the disposition to be mated with by a *suitable*, i.e. attractive, mate; or the disposition to provide nourishment to a *suitable* infant, i.e. one to whom the female is bonded in some way. But this would not fit with our desideratum (A3): affordances are relative to *specific* animals (or populations), not to some kind of normality condition. An animal that is abnormal in some way may still perceive what its environment affords to *it*, not to a normal specimen of its (or any other) kind.<sup>12</sup>

It is here that the modal force of potentiality (as captured in (P1) above) proves useful: potentialities are possibility-like, not conditional-like. To qualify as a potentiality a property need entail nothing stronger than a possibility; and that is precisely what affordances do. (Note, again, that I am not here trying to give a full account of affordance: not every potentiality is an affordance. It might turn out that only potentialities of a certain minimal degree should classify as affordances, so a bare possibility is still not enough. That is still a far cry from understanding affordances in terms of counterfactual-like dispositions.)

(A1) together with the problems for any stronger modal entailment is thus my first piece of evidence in favour of the view that affordances are dispositions or, more precisely, potentialities. Thus the Potentiality Thesis nicely explains (A1) without having any of the unwanted stronger implications of those dispositional accounts that appeal to counterfactuals. Like any realist account of dispositions, it also straightforwardly explains (A2), the requirement of objectivity, since potentialities are supposed to be entirely objective features of things in the world.

This is a first piece of evidence in favour of the Potentiality Thesis, but it is certainly not decisive, for two reasons.

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<sup>12</sup>As we have seen above, Scarantino (2003) explicitly makes room for probabilistic affordances, but he records his own inclination to restrict affordances to *reliable* cases. Note that in the examples I have given, not only the conditional but also the corresponding disposition ascription seems implausible. I should note that the objection is inspired by a structurally similar problem raised by Romy Jaster against dispositional accounts of abilities (Jaster forthcoming, Jaster and Vetter 2017). Other objections against dispositional conceptions of abilities will also apply to the envisaged view of affordances: it is not, for instance, clear that an intention is always involved in the exercise of an ability or an affordance. But pursuing this issue takes us deep into issues about intending and trying in the philosophy of action; see Vetter 2016, sct. 2.2-2.4 for a criticism of dispositional views of abilities along these lines.

First, not every objective property that entails a possibility must *be* a potentiality. If potentialities have categorical bases, then there is a good sense in which the categorical basis of a potentiality entails the relevant possibilities too: it is nomologically necessary that if something has the molecular structure of sugar, then it can be dissolved in water, and that if something has crystalline structure of glass, then it can easily be broken.<sup>13</sup> If affordances are, or are reducible to, such categorical bases, then they are not potentialities. I will address this challenge in section 5.

Second, not everything that's modal is a potentiality. We have seen in section 3 that potentialities are modal *properties*. But it has been debated whether or not affordances are properties. If they aren't, then they cannot be potentialities. I will take on this challenge in section 6.

## 5 Perceivability, and Why Affordances Aren't Categorical

Given (A1) and the potentiality view of dispositions, it seems clear that every affordance is at least correlated with a disposition. But if we think that every (non-fundamental) disposition has a categorical basis, then there are two conclusions to draw from that. We might identify the affordance with the disposition itself; or we might identify it with the disposition's categorical basis.

Note the qualification "if we think ...". Some philosophers (most notably, dispositional monists) reject the very idea of a disposition's having a categorical basis. If they are right, then my work is done. For the purposes of this section, however, I will proceed on the assumption that dispositions have categorical bases and argue that, even so, an affordance must be identified with the disposition itself.

If (at least some) dispositions have categorical bases, then the question is still open whether we are to identify an affordance with the disposition itself or with its categorical basis. In the case of a stair's climbability, the categorical basis may be the stair's height; in the case of a mug's graspability, the categorical basis may be the mug's diameter; in the case of a reachable object, the categorical basis may be the object's distance from the animal.<sup>14</sup> Identifying affordances with such categorical properties seems to offer the advantage of quantifiability: we can measure

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<sup>13</sup>Of course, everything trivially entails possibilities such as the possibility that it be raining or not raining. I count on the reader's sense of interpretative charity in isolating the relevant possibilities.

<sup>14</sup>I have said 'may be' because relational views, which I will discuss below, will differ. If they were to identify affordances with something categorical, they would identify them with the *ratio* between the animal's leg length and the height of the stair, or between the animal's hand span and the diameter of the object; and so forth. (See Stoffregen 2003, 123.) I will return to these relational views in section 6.

height, diameter, and distance. It is unsurprising that empirical research has focussed on such properties (see Basingerhorn et al. 2012).

In this section, I will argue against this alternative view. Affordances, I will claim, are indeed dispositions and *not* their categorical bases.

The argument relies on our fourth desideratum, (A4): affordances must be perceivable, and perceivable not just in some way or another but in paradigmatic affordance perception. Many categorical bases are perceivable, and are arguably perceived in paradigmatic affordance perception: when I see that the stair is climbable, I simultaneously see its height. But in other cases, this is not so.

When we perceive an apple to be edible, for instance, this perception may be mediated by properties of the apple that are arguably categorical: its size and shape, for instance; and others which may be categorical or dispositional, such as its colour and smell. But none of these properties has any claim to be the basis, categorical or otherwise, of the apple's edibility. That categorical basis is rather the apple's composition out of various nutritious substances (and the lack of poisonous substances in it). Likewise, to adapt an example from Reed (1996, 17f.), milk is disposed to provide nourishment to us (it 'affords nutrition to us'), and part of the categorical basis for this disposition is its containing lactose; but when we perceive milk as affording nourishment, we certainly do not perceive its containing lactose. As Reed (who gives the example to make a different point) stresses, '[t]he *E.coli* in our guts may literally come into contact with lactose molecules, but you and I must be content with encountering milk and milk products that make that molecular encounter possible.' (Reed 1996, 17) Finally, we may perceive an ice cube as affording cooling down without perceiving the categorical basis of its disposition to do so, the kinetic energy of the ice cube (the example is from Nanay (2011b, 306), again used to make a different point).

In each of these cases, we perceive an affordance, but we do not perceive its categorical basis. This is possible because affordances, like the corresponding dispositions, are 'multiply realizable': they can have many different categorical base properties, so that information about the affordance, like information about the disposition, does not specify which, if any, categorical basis is instantiated.

The categorical basis is no part of our phenomenology: this should be obvious. It is clearly not part of the content of our perceptual experience. No information about it is specified in the ambient array, in Gibson's terms: animals do not pick up information about lactose from looking at a glass of milk. The categorical basis is not even part of a proximate cause for the perception. When we perceive the apple as edible, milk as drinkable, or the ice cube as able to cool us down, what causally affects us may be categorical properties. But they are not the categorical basis of the dispositions in question; they are, rather, properties that may serve as *indicators* of that disposition: the apple's shape and colour, the milk's colour and

texture, the ice cube's transparency and the feeling it produces on our skin when in our vicinity. But those indicators, even if categorical, are clearly not to be identified with the affordance itself.

I conclude that it is not generally the case that when we perceive affordances, we perceive the categorical basis of a disposition. But it is clear that in all of the cases I have given, if we perceive an affordance at all, we perceive a disposition. Therefore, if affordances are that which is perceived in paradigmatic cases of affordance perception, affordances cannot generally be categorical base properties. For the sake of giving a uniform account of affordances, we should therefore identify them with dispositions, not their categorical bases, across the board.<sup>15</sup>

Given (A1) and (A4), then, we can argue that affordances are dispositions; that they are dispositions with a modal force of possibility; and that they are not categorical properties. This is not quite enough yet to vindicate the Potentiality Thesis, though. Potentiality as I have characterized it in section 3 is understood in an *anti-reductionist* way. But what I have said so far leaves it open that affordances are dispositions understood reductively (e.g. as higher-order properties, see Prior et al. 1982). I will now argue that (A4) can do double duty. Not only does it rule out that affordances are categorical properties, but it gives us reason to adopt an anti-reductionist view of the dispositions that are affordances.

According to a well-known criticism due to Colin McGinn, we do not perceive dispositions:

[D]ispositions are not visible properties of things... You may see *that* something is soluble by watching it dissolve, but you do not see its solubility – that property itself. ... You do not see what would obtain in certain counterfactual situations; you see only what actually obtains. When you see something as red you do not see the counterfactual possibilities that constitute its having a disposition to appear red. Your eyes do not respond to *woulds* and *might have beens*. (McGinn 1996, 540)

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<sup>15</sup>Scarantino (2003) has claimed that an affordance *qua* disposition is 'subjective in the sense of response-dependent', while 'the sense in which affordances are *also* objective is the sense in which a disposition in good standing has a *basis* constituted by objective properties' (Scarantino 2003, 952). But as noted above (footnote 2), the supposed subjectivity of the disposition is just its relational nature, which we may interpret in different ways (I interpret Scarantino's view as identifying affordances with certain *de re*-extrinsic dispositions; see section 6). None of these interpretations makes the relevant dispositions subjective, even in the sense of typical response-dependent properties, whose possession depends on the potential experiences of an observer. An affordance does not depend on experiences; it simply depends, like other extrinsic potentialities, on the features of objects other than its bearer.

There is a ready response that proponents of affordance perception have: as Nanay (2011a) points out, McGinn's argument assumes that for  $x$  to perceive something  $y$  is for  $x$ 's sense organs to respond to  $y$ . But this assumption can be, and has been, questioned. There is eye stimulation without perception, as in the case of looking at a homogenous fog (Gibson 1986, 53). More importantly, there can be perception without a corresponding stimulation of the eye. We perceive objects as moving, for instance, but arguably our eyes do not respond to that movement itself. (No doubt there must be *some* stimulation of the retina for visual perception to take place. The claim is just that the contents, or the direct objects, of perception are not limited to that which does the stimulating.)

Nevertheless, the perception of *woulds* and *might have beens* may remain odd. For how can we perceive something which isn't there? The problem is not just a matter of sensory organs responding to what we perceive. Even when, in perceiving something, we are just picking up information about something, or if something is represented in the content of our (veridical) perceptual experience, should it not be *there* to be perceived in the first place? This, I believe, is what McGinn trades on when he notes that we 'do not see what would obtain in certain counterfactual situations; you see only what actually obtains'.

Now, it may seem that there is a ready answer once again. Dispositions *are* actually there: they are actual properties of actual objects in the actual world. A disposition is quite different from a mere counterfactual situation.

Note, however, that on *reductionist* views, what accounts for the actuality, the 'being there', of a disposition is its categorical basis. But, I have argued above, the categorical basis is *not* the affordance; it is not what we see. What is there left for us to perceive when we perceive affordances? On reductionist views we tease apart a disposition's propertyhood, its localization in actuality, from its modality. The former is accounted for by its having a categorical basis; the latter may be analysed in terms of counterfactual conditionals or possibilities, but ultimately typically in terms of possible worlds. On the reductionist view, it appears, if we do not perceive the categorical basis when we perceive an affordance, then we would have to perceive (facts about) counterfactual situations, possible worlds, after all. But other possible worlds, on any account – whether they are alternative concrete universes (Lewis 1986a), sets of propositions (Plantinga 1974), fictions (Rosen 1990), or what have you – just aren't the kind of thing that can be perceived, most certainly not in the mundane cases of perception that we are interested in. Like dispositions, possible worlds aren't that which stimulates our sense-organs. But unlike dispositions, possible worlds *also* aren't that with which we interact in and on the basis on perception, or that which the environment must specify to an animal to secure its survival, and so forth.

On *anti-reductionist* views, as expressed in (P2) above, this problem is easy to circumvent. The disposition itself is there, it is part of actuality, it does not require counterfactual situations. It's not the kind of property that stimulates our retina, but it is there to be perceived. It may or may not have a categorical basis, but it is no less real with or without such a basis. I suggest that for this reason, such an anti-reductionist disposition – a potentiality – is the best fit for a dispositional account of affordances.

Taken together, then, (A1) and (A4) are nicely accounted for, and thereby support, the Potentiality Thesis. But I have made one assumption thus far which is crucial and still in need of vindication: I have assumed that affordances are properties. Potentialities, we have seen, are not just any kind of modal fact. They are modal *properties*. I now turn to vindicating (and qualifying) this assumption, which has been a matter of debate between dispositional and relational views in the ontology of affordances.

## **6 Relativity, Objectivity, and How the Potentiality Thesis Accommodates the Relational View**

Despite the attraction of the dispositional approach, the dominant approach in the literature on affordances seems to be that they are *relations* between animals and objects in their environment, not *properties* of objects in an animal's environment (see, e.g., Stoffregen 2003, Chemero 2003, Chemero 2009, Rietveld and Kiverstein 2014, Prosser 2011). And if affordances aren't properties, it has been argued, then a fortiori they cannot be dispositional properties (Chemero 2003, Stoffregen 2003). However, given the discussion of section 3, we can now see that this supposed entailment does not go through. In this section, I will argue that the third commitment of the potentiality view, the distinctions drawn above in section 3 and codified in (P3), allows us to accommodate the whole variety of relational as well as non-relational views of affordances within a dispositional account.

For relationists, an affordance is a relation between an animal and an object or objects in its environment. In categorical terms, one might say that the basis of a stair's climbability is not the stair's height but the ratio between its height and the animal's leg length; the basis of a mug's graspability is not the mug's diameter but the ratio between its diameter and the animal's hand span; and so forth. But I have argued above that affordances cannot be categorical properties; and the argument applies to relations as well. An apple's edibility for an animal, on the relational view, might be based on its components 'fitting' the digestive system of the animal. But that relation of fit (whose categorical credentials are questionable in any case) has no better claim to be perceived in affordance perception than the apple's

nutrient constitution. Thus my argument from section 5 applies to the relational view as well. How should relationists think of affordances, then? The answer is simple: as *joint potentialities*, possessed by animals jointly with objects in their environment. As we have seen in section 3, joint potentialities are themselves relations, and thus fit the relationist bill.

If my arguments in sections 4-5 have been correct, then we can and should understand relational views of affordances as dispositional too: the important difference between them and the orthodox dispositional views is that on relational views, an affordance is a *joint potentiality* possessed by animals and objects in their environment together.

So the potentiality view, given its commitment to the distinctions codified in (P3) above, can accommodate relational views of affordances. But the distinctions in (P3) can do more than that. They provide us with a classification of different views of affordances, and a way of understanding their interdependence. Put briefly, we can say that on relational views (put together with the arguments of sections 4 and 5), affordances are *joint potentialities*; on one dispositional view (Scarantino's), they are what I have called *de re*-extrinsic potentialities, while on another (Turvey's), they are what I have called *de dicto*-extrinsic potentialities. Since, as we have seen in section 3, extrinsic potentialities of both the *de re* and the *de dicto* variety are grounded in joint potentialities, the gap between dispositional and relationist views begins to narrow on this understanding of the views. Finally, there is a minority view (in the spirit of Reed) that can be interpreted as taking affordances to be *intrinsic* potentialities, which are possessed by an object independently of anything else. Such an intrinsic potentiality can be instantiated even if there is no partner potentiality; but once its partner potentiality is present, it will immediately give rise to all the other varieties: joint potentiality as well as *de re* and *de dicto* extrinsic potentiality. Given all this, I want to suggest that the debate between these different views of affordances is somewhat moot: the different theories offer not widely divergent metaphysical pictures of what affordances are, but merely focus on different aspects of the overall package that is present whenever we have an affordance.

Let me now look in a little more detail at the different views and sketch the arguments given for them, in order to give some reason to think that they fit into the classification provided by (P3).

According to Scarantino, affordances are to be analysed as follows: 'At time *t*, if [normal ecological] *background conditions* *C* were the case, then (if the *triggering circumstances* *T* were the case, then a manifestation *M* involving [the affordance-bearing object] *X* and [the organism] *O* would be the case (with probability *p*))' (Scarantino 2003, 956; for present purposes, I will ignore the fact that Scarantino relies on a counterfactual view of dispositions, which I have rejected in section 4).

Note that Scarantino here invokes a particular organism, *O*. The dispositions that are affordances, on his analysis, are each relative to one particular organism. If that organism changed, or ceased to exist, the relevant disposition might change, or would cease to exist. Affordances, on this view, are extrinsic dispositions: each depends *de re* on a particular object, the organism *O*. In the terminology developed in section 3 and codified in (P3), they are *de re*-extrinsic potentialities. And as such, they are fully grounded in joint potentialities – that is, in affordances as characterized by the relational view. And so it turns out that the relational view and at least one version of the dispositional view of affordances are much more closely related than the literature on affordances would lead one to expect.

We can confirm this result by looking briefly at some arguments for the relational view, which are generally considered to speak against a dispositional view. Here it will turn out that the arguments indiscriminately favour the relational view (as championed by Chemero and Stoffregen) and the *de re*-extrinsic potentiality view (as championed by Scarantino). Let me be clear that I do not here want to endorse these arguments; I merely wish to show that they do not favour the relational view over the *de re*-extrinsic view.

For Stoffregen (2003), affordance perception must provide animals with direct perceptual knowledge of their options or opportunities for action, of ‘what one can do’. But, Stoffregen claims, if an affordance does not include the animal and its abilities, then it does not yield enough information; the stair’s being climbable for animals with such-and-such leg length (even if it required the existence of such animals) does not provide the perceiver with options for acting unless she also knows that *she* is an animal with such-and-such leg length. Hence, Stoffregen concludes, affordances must be relations that include the animal herself, and thus require no further information to guide her action. (See Stoffregen 2003, 121.) This argument, if successful, supports the joint potentiality view as well as the *de re*-extrinsic view: both involve the animal and depend on its abilities. Chemero (2003) argues that direct perception, involving as it does the perceived object itself, must be perception of relations between the perceiver and the perceived object, otherwise your perception of a given object could not be distinguished from mine (Chemero 2003, 186). Apart from invoking some controversial premises about direct perception, the argument does not favour relations over *de re*-extrinsic properties: a stair’s potentiality to be climbed *by me* is as distinct from its potentiality to be climbed *by you* as are the corresponding relational facts.

The other well-known dispositional view of affordances, formulated in Turvey (1992), also understands affordances as extrinsic dispositions but seems to make them *de dicto*-extrinsic. Turvey (1992) assumes that all dispositions are ‘complemented’ by another disposition, such that a disposition can only be possessed if there is something that has its complementary disposition. Thus, on his view, noth-

ing could be water-soluble if there were no water with the complementary disposition to dissolve it. In our terminology from section 3, this amounts to the idea that all potentialities must have an (instantiated) partner potentiality, and that therefore all potentialities are extrinsic to the extent that they depend *de dicto* on there being something that possesses its partner potentiality. Given these assumptions, Turvey defines affordances as those dispositions whose complementary dispositions are ‘effectivities’: dispositions ‘for an animal to effect or bring about a particular action’ (Turvey 1992, 179). Unlike Scarantino’s *de re*-extrinsic view, such a *de dicto*-extrinsic view of affordances will not accommodate the relationists’ arguments since the particular animal that perceives an affordance is not involved in the affordance perceived. It will, however, more easily do justice to the idea that different animals perceive the same affordances. Thus when you and I perceive the climbability of a stair, it is not the case that you perceive one disposition which depends on you having certain abilities and I perceive one which depends on my having certain abilities, but we will both perceive the same affordance, which depends on (there being some instances of) an ability which we both possess.

Whatever their relative merits, both the *de re*-extrinsic potentiality view and the *de dicto*-extrinsic potentiality view of affordances identify affordances with a kind of potentiality that is fully grounded in the joint potentiality that is an affordance on the relational view.

Relational views and the correlated *de re*-extrinsic view nicely capture the directness of affordance perception and its link to action. But those who stress the ecological side of ecological psychology (most prominently Reed 1996) object that tying affordances to particular animals does not do justice to their role in shaping an ecological niche and guiding natural selection. On such a view, affordances are resources that are ‘available to come into relationship with animals, but this need not happen’ (Reed 1996, 27). They shape natural selection, and thus must at least sometimes be present prior to the animals’ developing so as to be able to make use of them. A dispositional view that aims to cater to such considerations might do better to move away from the *mutualist* approach to affordances, that is, the idea that ‘affordances *do not exist* without the animal who perceives and uses them.’ (Reed 1996, 26) This may suggest that affordances are *intrinsic* potentialities: thus the climbability of a stair is not its climbability for you or climbability for me, but perhaps rather its climbability for animals with a certain leg length and such-and-such motor capacities. The edibility of a berry is not its edibility for you or me, but rather its edibility for animals with such-and-such digestive systems – a potentiality that a berry could possess even if there were no such animals, and which might play a role in certain animal populations evolving to have the right kind of digestive system. Michaels (2003) gives a qualified defense of such intrinsic affordances under the name ‘generic affordances’: ‘we may want to leave room in our

theory for generic affordances to foster the development (or assembly) of means for their actualization. Generic affordances could exert selection pressures—on the evolution of species, the learning of individuals, and the successive refinement of tools’ (Michaels 2003, 141; see also Kadar and Shaw 2000). (Reed himself, somewhat surprisingly, seems more inclined towards the Turvey *de dicto*-extrinsic view: ‘affordances are features not of the environment of habitat as such but of the *environment in relation to a given population of animals*’ (Reed 1996, 43). The view seems to be that an environment offers affordances to a given population, depending on the abilities that exist in the population, but independently of any particular animal in the population. Much as on Turvey’s view, here affordances for Reed do not depend on any particular animal, but they do depend on *there being* some animal within the population with suitable corresponding abilities.)

Which of these different potentialities, then, should we say is an affordance? I want to suggest that we can have them all: the joint potentiality provides a full ground for both the *de re* and the *de dicto* extrinsic potentialities, and requires the intrinsic potentiality as a precondition. If we have any member of the bundle, we will have them all – with the exception of the intrinsic potentiality, which can be instantiated without there being a partner for a joint potentiality. We may allow the different members of the bundle of potentialities to play different roles and relegate the question which of them deserves the title of affordance to the class of merely verbal disputes.

## 7 Conclusion

I have now completed my defense of the Potentiality Thesis: the thesis that affordances are (a species of) potentialities. I believe the thesis to be a fruitful starting point for the mutual engagement of affordance theories of perception on the one hand, and anti-Humean theories of dispositions on the other. Both sides, as I have pointed out in my introductory remarks, stand to gain from their association, the one being integrated into an independently supported and flourishing research programme in metaphysics, the other overcoming its epistemological worries and extending the reach of its explanatory powers. Together they can provide a full-blown anti-Humeanism, rejecting both neo-Humean metaphysics and Humean epistemology.

I have not given a definition of affordances: that is, I have not said exactly *which* potentialities are affordances. Even if we adopt the pluralism I recommended at the end of section 6, there are still a number of options that we may need to decide on: whether affordances are joint potentialities, extrinsic potentialities, or intrinsic potentialities, we may want to say how they differ from other potentialities of the

same category. We might, for instance, follow Turvey and others in defining affordances as a correlative of abilities or within a relational view, as a joint potentiality possessed by an animal together with objects in its environment that gives rise to an extrinsic ability (or ‘effectivity’) on the side of the animal. Or we might require that affordances are potentialities with a specific kind of manifestation: the action of an animal on objects in its environment, perhaps. Or, finally, we might incorporate what ecological psychologists refer to as the ‘meaningfulness’ or ‘normativity’ of affordances, by requiring that affordances are potentialities whose manifestations have a positive or negative value for the animal. And there might be yet other options. What I have argued here does not decide the correctness of any full definition of affordances, but it provides us with a framework for any such definition: the framework of an anti-Humean metaphysics of potentiality.<sup>16</sup>

## References

- Aimar, Simona. 2018. “Disposition Ascriptions.” *Philosophical Studies* <https://doi.org/10.1007/s11098-018-1084-9>.
- Basingerhorn, Annemiek D., Zaal, Frank T.J.M., Smith, Joanne, and Pepping, Gert-Jan. 2012. “On possibilities for action: The past, present and future of affordance research.” *AVANT* 3:54–69.
- Bird, Alexander. 1998. “Dispositions and Antidotes.” *The Philosophical Quarterly* 48:227–234.
- . 2007. *Nature’s Metaphysics*. Oxford: Oxford University Press.
- . 2018. “Fundamental Powers, Evolved Powers, and Mental Powers.” *Aristotelian Society Supplementary Volume* 92:247–275.
- Chemero, Anthony. 2003. “An Outline of a Theory of Affordances.” *Ecological Psychology* 15:181–195.
- . 2009. *Radical Embodied Cognitive Science*. Cambridge, MA: MIT Press.
- Choi, Sungho and Fara, Michael. 2012. “Dispositions.” In *The Stanford Encyclopedia of Philosophy*. Edward N. Zalta.

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- Clarke, Randolph. 2009. "Dispositions, Abilities to Act, and Free Will: The New Dispositionalism." *Mind* 118:323–351.
- Cross, Troy. 2012. "Recent Work on Dispositions." *Analysis* 72:115–124.
- Ellis, Brian. 2001. *Scientific Essentialism*. Cambridge: Cambridge University Press.
- Fara, Michael. 2008. "Masked Abilities and Compatibilism." *Mind* 117:843–865.
- Fodor, J.A. and Pylyshyn, Z.W. 1981. "How direct is visual perception?: Some reflectionson Gibson's "Ecological Approach"." *Cognition* 9:139–196.
- G.E.Moore. 1911. *Ethics*. Oxford: Oxford University Press.
- Gibson, James J. 1966. *The Senses Considered as Perceptual Systems*. Boston: Houghton-Mifflin.
- . 1986. *The Ecological Approach to Visual Perception*. New York: Psychology Press. Taylor and Francis Group.
- Heft, Harry. 1989. "Affordances and the Body: An Intentional Analysis of Gibson's Ecological Approach to Visual Perception." *Journal for the Theory of Social Behaviour* 19:1–30.
- Heil, John. 2010. "Powerful Qualities." In Anna Marmodoro (ed.), *The Metaphysics of Powers: Their Grounding and Their Manifestation*, 58–72. New York: Routledge.
- Hufendiek, Rebekka. 2016. "Affordances and the Normativity of Emotions." *Sythese* DOI 10.1007/s11229-016-1144-7.
- Jacobs, Jonathan D. 2011. "Powerful Qualities, Not Pure Powers." *The Monist* 94:81–102.
- Jaster, Romy. forthcoming. *Agents' Abilities*. Berlin/New York: de Gruyter.
- Jaster, Romy and Vetter, Barbara. 2017. "Dispositional Accounts of Abilities." *Philosophy Compass* 12:e12432.
- Jaworski, William. 2016. *Structure and the Metaphysics of Mind: How Hylomorphism Solves the Mind-Body Problem*. Oxford: Oxford University Press.
- Jones, Keith S. 2003. "What Is an Affordance?" *Ecological Psychology* 15:107–114.

- Kadar, E. and Shaw, R.E. 2000. "Toward an ecological field theory of perceptual control of locomotion." *Ecological Psychology* 12:141–180.
- Kratzer, Angelika. 1981. "The Notional Category of Modality." In H. J. Eikmeyer and H. Rieser (eds.), *Words, Worlds, and Contexts. New Approaches in Word Semantics*. Berlin/New York: de Gruyter.
- . 1991. "Modality." In Arnim von Stechow and Dieter Wunderlich (eds.), *Semantik: Ein internationales Handbuch der zeitgenössischen Forschung*, 639–650. Berlin/New York: de Gruyter.
- Lewis, David. 1986a. *On the Plurality of Worlds*. Oxford: Blackwell.
- . 1986b. *Philosophical Papers, Volume II*. Oxford: Oxford University Press.
- . 1997. "Finkish Dispositions." *Philosophical Quarterly* 47:143–158.
- Lowe, E.J. 2011. "How *Not* to Think of Powers: A Deconstruction of the "Dispositions and Conditionals" Debate." *The Monist* 94:19–33.
- Manley, David and Wasserman, Ryan. 2007. "A Gradable Approach to Dispositions." *The Philosophical Quarterly* 57:68–75.
- . 2008. "On Linking Dispositions and Conditionals." *Mind* 117:59–84.
- Martin, C. B. 1994. "Dispositions and Conditionals." *The Philosophical Quarterly* 44:1–8.
- . 1998. "Rules and Powers." *Philosophical Perspectives* 12:284–312.
- . 2008. *The mind in nature*. Oxford: Oxford University Press.
- McGinn, Colin. 1996. "Another Look at Color." *Journal of Philosophy* 93:537–553.
- McKittrick, Jennifer. 2003. "A Case for Extrinsic Dispositions." *Australasian Journal of Philosophy* 81:155–174.
- Michaels, Claire F. 2003. "Affordances: Four Points of Debate." *Ecological Psychology* 15:135–148.
- Molnar, George. 2003. *Powers. A Study in Metaphysics*. Oxford: Oxford University Press.

- Mumford, Stephen and Anjum, Rani Lill. 2011a. "Dispositional Modality." In C.F. Gethmann (ed.), *Lebenswelt und Wissenschaft, Deutsches Jahrbuch Philosophie* 2. Meiner.
- . 2011b. *Getting Causes from Powers*. Oxford: Oxford University Press.
- . 2018. *What Tends to Be: The Philosophy of Dispositional Modality*. London / New York: Routledge.
- Nanay, Bence. 2011a. "Do We See Apples as Edible?" *Pacific Philosophical Quarterly* 92:305–322.
- . 2011b. "Do We Sense Modalities with our Sense Modalities?" *Ratio* 24:299–310.
- . 2012. "Action-Oriented Perception." *European Journal of Philosophy* 20:430–446.
- . 2013. *Between Perception and Action*. Oxford: Oxford University Press.
- Noe, Alva. 2004. *Action in Perception*. Cambridge, MA: MIT Press.
- Plantinga, Alvin. 1974. *The Nature of Necessity*. Oxford: Oxford University Press.
- Portner, P. 2009. *Modality*. Oxford: Oxford University Press.
- Prior, Elizabeth W., Pargetter, Robert, and Jackson, Frank. 1982. "Three Theses about Dispositions." *American Philosophical Quarterly* 19:251–257.
- Prosser, Simon. 2011. "Affordances and Phenomenal Character in Spatial Perception." *Philosophical Review* 120:475–513.
- Reed, Edward S. 1996. *Encountering the World. Toward and Ecological Psychology*. Oxford University Press.
- Rietveld, Erik and Kiverstein, Julian. 2014. "A Rich Landscape of Affordances." *Ecological Psychology* 26:325–352.
- Rosen, Gideon. 1990. "Modal Fictionalism." *Mind* 99:327–354.
- Scarantino, Andrea. 2003. "Affordances explained." *Philosophy of science* 70:949–961.
- Siegel, Susanna. 2014. "Affordances and the Contents of Perception." In Berit Brogaard (ed.), *Does Perception Have Content?* Oxford University Press.

- Steinberg, Jesse R. 2010. "Dispositions and Subjunctives." *Philosophical Studies* 148:323–341.
- Stoffregen, Thomas A. 2003. "Affordances as Properties of the Animal–Environment System." *Ecological Psychology* 15:115–134.
- Tillas, Alexandros, Vosgerau, Gottfried, Seuchter, Tim, and Caiani, Silvano Zipoli. 2016. "Can Affordances Explain Behavior?" *Review of Philosophy and Psychology* DOI 10.1007/s13164-016-0310-7.
- Turvey, M.T. 1992. "Affordances and Prospective Control: An Outline of the Ontology." *Ecological Psychology* 4:173–187.
- Vetter, Barbara. 2011. "On Linking Dispositions and which Conditionals?" *Mind* 120:1173–1189.
- . 2014. "Dispositions without Conditionals." *Mind* 123:129–156.
- . 2015. *Potentiality: From Dispositions to Modality*. Oxford: Oxford University Press.
- . 2016. "Are Abilities Dispositions?" *Synthese* DOI 10.1007/s11229-016-1152-7.
- . 2018. "Evolved Powers, Artefact Powers, and Dispositional Explanations." *Aristotelian Society Supplementary Volume* 92:277–297.
- Vihvelin, Kadri. 2004. "Free Will Demystified: A Dispositionalist Account." *Philosophical Topics* 32:427–450.
- Whittle, Ann. 2010. "Dispositional Abilities." *Philosophers' Imprint* 10.