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RESEARCH ARTICLE

If Sounds Were Dispositions: a Framework Proposal for an Undeveloped Theory

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Abstract: In the realm of the philosophy of sounds and auditory experience there is an ongoing discussion concerned with the nature of sounds. One of the contestant views within this ontology of sound is that of the Property View, which holds that sounds are properties of the sounding objects. A way of developing this view is through the idea of dispositionalism, namely, by sustaining the theory according to which sounds are dispositional properties (Pasnau 1999; Kulvicki 2008; Roberts 2017). That portrayal, however, is not sufficient, as it has not inquired the metaphysical debates about dispositions beyond the conditional analysis. In this paper, I try to advance this view by including recent developments (for instance Bird 2007; Vetter 2015) in the field of dispositionalism and I analyse whether this new version can sort out known and new objections to Property View.

Keywords: Audibility; dispositions; ontology of sound; potentiality; property view; sounds.

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0. Introduction

Imagine that you are sitting next to a river, having a picnic with friends. It is a sunny but slightly chilly day, so you are wearing gloves. You take your beer bottles to make a toast and, as the bottles collide, you are surprised to realise that your bottle seems to be made of plastic instead of glass. The gloves had prevented you from realising that it was a plastic bottle and, because in shape and colour it imitates glass beer bottles, only the lack of the characteristic sound of clinking glasses gives away the material it is made of. When you finally take a sip, the feeling on your lips confirms what the sound had hinted: it is indeed a plastic bottle.

This little scene relates to different issues regarding the philosophy of sounds: the relation of sounds and sources (Nudds 2010; Casati, Di Bona, Dokic 2013; O'Callaghan 2007b; Fowler 2013), the problem of perceptual justification (Handel 2006), the issues of sense multimodality (O'Callaghan 2011) and, last but not least, the problem of the nature of sounds (O'Callaghan 2007; O'Shaughnessy 1957; Pasnau 1999; Roberts 2017). The latter is the one I am concerned with in this paper. Is it possible to say that plastic *has* a different sound than that of glass? I think it is intuitive to answer 'yes.' In order to justify this intuition, I will appeal to a view in the ontology of sounds that should explain this in a satisfactory sense, that is the dispositional view or sound dispositionalism.

Typically, by dispositions we mean things such as fragility, solubility, irascibility and the like. Dispositions are properties that, under certain circumstances, could manifest themselves. The suffix 'ity' is quite indicative of those cases. This paper is about those sorts of properties and it examines the possibility of claiming that "sound" is a sort of disposition. It can be said that an object has "the disposition to sound" or, seemingly, "sonority" if so and so occur. It will be a matter of dispute what the nature of this "so and so"—namely, the conditions—is about.

The debate is circumscribed in the frame of Sound Ontology (SO), which, in this sense, has split into three views: the wave view (WV), where sounds are considered as acoustic waves (WV) as physics and, more precisely, acoustics tend to say; the property view (PV), where sounds are either properties of the perceiving mind (PV1), as psychology presumably

argues, or properties of the object (PV2); and, finally, the event view (EV), where sounds are considered as events (O'Callaghan 2007a, 2009, among others, favours this stance). Seemingly, the dispositional view would belong to PV2, or so it has been interpreted by those who have taken this route.

I must clarify that my purpose is not to decisively advocate for a dispositional view on sounds. I am not trying to convince you to accept the thesis that sounds are dispositional properties of objects. My commitment in this paper is related to the consequences and implications of such dispositional account.

This is not the most popular view in SO. Actually, the so-called *property view*, mostly labelled as such when it is criticised, rarely unfolds in a way that takes the global philosophical discussion on properties into account: are they universals? Are they tropes? There is only a handful of allusions in this sense: P. F. Strawson (1959), on the one hand, and Edmund Husserl (1984), on the other, have made some type-token considerations of sound as universal (for instance the *C* note) and as a particular (the playing of the note C for instance), but that does not take sound *as if* it were a property *of* an individual.[1] This, I argue, is due to a problem of *under-specification,* common to all the views that figure in the SO.[2] The field is thus in need of further development.

This applies for the dispositional account of sounds, which is a species within PV, and more precisely PV2. Three authors in particular, Pasnau (1999), Kulvicki (2008), and Roberts (2017), have advanced this view. Yet, sound's characterisation as a disposition *has not* been elaborated close to the spirit of the long metaphysical debate on dispositions. Only Roberts (2017, 347) mentions in passing the problems pertaining the conditional analysis, let alone newer considerations on the problems of modality and

[1] As known, the fact that sounds do not coincide with the idea of basic particular in Strawson's metaphysics, namely that of the material body, is what motivates the examination of such problematic 'individuals.' The revival of sounds as a matter of philosophical discussion most likely comes from Strawson.

[2] A notorious exception in that of Jonathan Cohen (2010, 205) who considers universal and/or trope form of abstract properties, while tackling linguistic objections against PV.

potencies (Vetter 2011a, 2011b, 2013a, 2015). Thus, a first goal of the paper is to achieve a more complete picture of the dispositional view.

The first section will provide a picture of Sound Ontology, hopefully short but compelling. The second section will present the current state of affairs of the dispositional view on sounds. A third section introduces the classical considerations from the dispositions' debate—its features under the conditional analysis and the newer potentiality argument—to the discussion on sound. In a fourth section, I want to learn if a new version of sound dispositionalism can withstand the criticisms that some authors (O'Callaghan 2011; Casati and Dokic 2014) have raised against the dispositional account and to evaluate its prospects for the future within the realm of SO.

In this article my contention is to bring two debates together: that of the philosophy of sounds and auditory experience and that of dispositions. A brief literature review, especially in the first and third sections, is necessary to make intelligible the conceptual exchange between both discussions. This characterisation, however, is not free of difficulties and I do not take for granted that sounds are dispositions. Even more, since I am not sure sounds or sonority are dispositions, I have opted for the title "If sounds were dispositions…" and by doing so I also want to make more explicit the character of this inquiry as hypothetical.

1. The ontology of sound

The expression "Ontology of sounds" refers to the effort to define what sounds are. There are, to my knowledge, two general proceedings in that quest: the purely ontological taxonomy of theories, which is elaborated by O'Callaghan (2007a, and with Nudds 2009), and the topological approach (the label is mine), which inquiries *where* sounds are (Casati and Dokic 1994, 2005). Both taxonomies overlap in some regards, but not in others.

The first ontological choice to make is that of deciding whether sounds are properties or individuals. For some (Roberts 2017), this is what divides the ontologies of sound. There are, however, more diversified approaches. In O'Callaghan's taxonomy, for instance, this amounts to three possibilities: the wave view (WV), the property view (PV), and the event view (EV).

The Wave View (WV) claims, from Aristotle[3] to modern acoustics, that sounds are acoustic waves. Despite its popularity, there are a number of issues that WV cannot account for. The most important one is that it presupposes an Error Theory of perception:[4] we, for one, do not perceive sounds to be at any acoustic wave as a vibration in an elastic medium. We perceive them as *coming from* a source (a sounding object, an event, etcetera).

This gives rise to what we can consider as *the phenomenological desideratum*, which any prospect of SO should comply with. At least, O'Callaghan (2007a, 14) notices, it is better to choose a theory that explains the phenomenological aspect of sound, to one that does not. Authors differ on the degree of importance they assign to it, some take it as a necessary constrain, some as an inescapable requirement, and some consider it a discussion they could bypass.[5]

Another option is that of PV, which is twofold: it either describes sounds as properties of the perceiving mind (PV1) or it describes sounds as properties of the sounding objects (PV2). The most common one is that of PV2, ever since John Locke described them in his *Essay* as "secondary qualities."[6] Typically, secondary qualities are thought of as being qualities of the objects somehow enabled, detected and identified by our perception. However, it is far from decisive that secondary qualities in general (let alone sounds) are

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[3] Aristotle is usually considered in such fashion in many historical accounts (Pasnau 1999, 310; Casati and Dokic 2014).

[4] In neuroscience we can find a similar problem while dealing with vision and the so-called "inverse problem" in a Berkeleyan fashion. The information in the retina does not correspond directly to the real structure of the world, so how is it possible that we respond successfully on the basis of vision? (Purves 2010)

[5] Such assessment is visible while pointing out to the 'Error Theory' as a major inconsistency to be resolved or that undermines the whole effort for searching a coherent view on the nature of sound, that is the case with Pasnau (1999), Casati and Dokic (2014).

[6] In the seventh chapter of the second book ('On Ideas') from the *Essay Concerning Human Understanding*, while addressing the simple ideas, Locke formulates the notion of "primary and secondary qualities." Primary qualities are those that are inseparable of a body, for instance, solidity or extension; whereas, secondary qualities are *"nothing in the objects themselves but power to produce various sensations in us"* (Locke 1999, 117). Such is the case of sounds.

exclusively objects' properties as there is an ongoing discussion on whether they could also, or instead, being regarded as properties of the perceiving mind (see, for instance, Egan 2006). In such scenario, we would face PV1.

PV1 would be focused on sound as a purely an auditory phenomenon and, therewith, it would permit auditory hallucinations to be considered as sounds, since sounds' privacy would be plausible (this is an anathema for O'Callaghan 2007a). Not only that, but there would be as many sounds as hearers (Casati and Dokic 2014). Sound would lie, thus, in the ear of the beholder. No philosopher seems to be explicitly endorsing this stance, but there are interpretations that may implicitly argue in favour of it: O'Callaghan (2007), Casati and Dokic (2014) point to D. L. C. Robert Maclachlan's *Philosophy of Perception* (1989, New York, Prentice Hall); Casati and Dokic (2009, 103), additionally, mention O'Shaughnessy (1957). There is even mention of Edmund Husserl and Franz Brentano, usually overlooked in the analytical debates on sounds, as potentially approaching this view (Méndez-Martínez 2020).

In the same guise, O'Callaghan (2009, 34) appeals here to the argument from the vacuum, for which there are two ways of arguing this: either one says that a medium is a necessary condition for sound (a bell struck in the vacuum does not make any sound); or you say that the audible properties of sound (namely, timbre, pitch and loudness) cannot be afforded in the absence of a medium, and do not produce a veridical perception. PV2, as I elaborate below, is at odds with these arguments.

Finally, we have the event view (EV), defended by O'Callaghan (2007a, 2009)[7] and somehow by Casati and Dokic (2014). O'Callaghan defends what the latters label as "Located Event Theory," whereas the option defended by Casati and Dokic is that of the "Relational Event Theory."

To say that "sounds = events" is to claim that they are spatiotemporal localisable occurrences that are to be identified neither with properties nor with waves. EV tries to deliver in the case of the phenomenological desideratum. Another key aspect that will mark a difference with any potential

[7] Despite being considered as the most representative figure in EV, O'Callaghan has employed other labels for more current elaborations: the mereological position, for instance, which considers the causal sources of sound as a "part" of sound (O'Callaghan 2011).

PV2, dispositional view included, is that EV relies in the *manifestation* of sound: whenever there is a sound, there is a sounding (O'Callaghan 2009, 36). EV pays a great deal of attention to the problem of relating to sources and, in that sense, it is probably the view that encompasses the most in its effort to explain sound. In reporting so, things complicate to the extent that some have preferred to cast aside causality, sources and just addressing "pure events" (Scruton 2009). A problem this theory has, among many that are beyond the scope of this paper, is that it must provide several explanations to specify the location of sounds; echoes and Doppler effect are recurring puzzling cases (Casati and Dokic 2014; O'Callaghan 2007b; Fowler 2013).

In addition, as with the other views, EV is not free from the problem of under-specification. Although maybe not as properties, events represent another large topic in ontology and metaphysics to which EV relates to at a lesser extent.

This is the purely ontological classification. Precisely because of the problem of location and spatiality, Casati and Dokic (1994, 2014) consider that deciding *where* sounds are warrants as much explaining as the matter of *what* they are. For them, there are three broad conceptions of sound: *proximal*, which locates sound *at* or *in* the hearer; *medial*, which locates sound *between* the hearer and the sounding event/object; and *distal*, which locates sound at the sounding object or event.[8]

In short, these are the views that compose SO, which, in my opinion, offer a general description of the discussion. There are other particular classifications depending on what is being inquired. Scruton (2009) thinks of physicalist and non-physicalist conceptions, where common rival views such as that of Pasnau and O'Callaghan fit, for him, in the physicalist row. Dokic (2007), who reviews the tensions between the "unique event" and the "repeatable object" ontologies, is another example.

Let us now evaluate the proposal in question: the dispositional view.

[8] There are some correspondences between both taxonomies. WV, for instance, is clearly distal; whereas EV is presumably distal, although it sometimes seems to make some concessions that put it close to WV (Casati and Dokic 2014). PV1 is proximal, whereas PV2 is distal.

2. Sound dispositionalism, a state of art

A preliminary outline is useful. On these views, sounds are properties and, curiously enough, most proponents of a PV point out to dispositional properties. However, in the large debate concerning properties there are other available options on how to draw on properties, yet philosophers of sound have chosen this one.[9] I will analyse in the conclusions whether this compromises, or not, this view.

This dispositional view is a sort of PV and, seemingly, it is PV2, because the argument points out the *disposition-to-sound* in the object, rather than in or at the hearer. If the dispositional locates what is going on at the object, it is certainly not medial nor proximal, but rather distal. If it locates sounds at the hearer, then it is proximal.

These implications will be clearer further on. For now, let us elaborate on the state of affairs of the dispositional view that, though unpopular in the overall philosophical discussion on sound, is not without representatives (Pasnau 1999; Kulvicki 2008; Roberts 2017; and, at a certain extent, Cohen 2010).

Pasnau's paper is probably one of the most influential sources in the field of the philosophy of sounds, which is probably due to its contribution to the revival of the debate. In it, Pasnau proposes:

> ...identifying sound with the vibrations of the object that has the sound. More cautiously, I would say that sounds either are the vibrations of such objects, or supervene on those vibrations. The former would imply a physicalist account of sound, whereas the latter would have room for a dispositional account. (Pasnau 1999, 317)

However, the part concerning the supervenience on vibrations does not do the job in showing strong adherence to a dispositional model. An issue

[9] A case of an adherent of this view who is not championing a dispositionalist alternative is Jonathan Cohen (2010). He elaborates on the idea that the characteristic temporal feature of sound is usually taken to be at odds with its characterisation as a property. Although his defence does not mention dispositions, his treatment could serve dispositional arguments.

that here seems innocuous is that of sounds "supervening." Usually, the expression used is that of "being instantiated by" while describing exactly the same (for instance O'Callaghan 2007a, 66). It is yet to be inquired, though, on whether they are equivalent and exchangeable sentences,[10] for the appeal to supervenience has been contested for some of those who are disposition realists, and a dispositional account of Anti-Humean inspiration would spare us of modelling through the idea of supervenience, as I will elaborate in the next section.

Although Pasnau does not go deeper in this, he formulates one of the key ideas for the dispositional account while saying that objects *have* sound (Pasnau 1999, 316). This goes against the grain concerning the ordinary language use of sound as something that is "made" and not "had" (Pasnau 1999, 310). Not only in this having/making sound distinction has Pasnau paved the way down for sound dispositionalism but also regarding the appeal to colour. In so doing, he has a very different attitude towards colour analogy than that of O'Callaghan's (2007a), which goes against the 'tyranny' of the visual.[11]

Besides the distinction and the appeal to colour analogy, Pasnau does not add more on how this dispositional account could be. In the end, the

[10] I fear they are not, because although at a certain point we can use them without reserves, while being specific 'supervenience' commits us to a metaphysical picture (the Lewis-Humean one) which could have, or not, unwarranted features on how the world is structured.

[11] If considered as an endeavour within the philosophy of senses or the philosophy of perception, the philosophy of sounds and auditory experiences shares a relatively common ground with that of colour and vision: there are ontological discussions on the nature of both colour and sounds; there are several positions concerning the phenomenological content of our auditory and visual experiences, and so forth. However, when compared to the forays in the realm of colour and vision, the philosophy of sounds and auditory experience is considerably less developed. Not only that, but it has browsed, at large, many of the discussions that have taken place in the philosophy of colour and vision. Trying to explore, independently, new paths for the auditory phenomena is a task that O'Callaghan undertakes, rebelling against the 'tyranny of the visual.' Of course, not all the philosophers in this new field would agree with such assessment and particularly those defending dispositional views (Pasnau, Kulvicki, Roberts), for they appeal to an analogy with colour.

goal of his paper is rather the criticism towards the "standard view." By using such label, Pasnau refers to both WV and PV—arguably PV1—, whose conflation is rather incoherent because it allows and even endows an 'Error Theory' of perception.

John Kulvicki has a more detailed argument to offer. In his view, sounds are "stable properties" of the objects. Concerning the other philosophers' taxonomies and classifications, in O'Callaghan's taxonomy, this would clearly classify as PV. The same can be said of Casati's and Dokic's classification. When Kulvicki states that: "*sounds are perceived to have locations, and those locations seem to correspond to the objects that make the sounds*" (Kulvicki 2008, 1), he chooses a "distal" view. But, beyond these brandings, his account is also 'dispositional,' as he adds that: "*Perhaps sounds are not vibrations per se but dispositions to vibrate in response to certain kinds of stimulation*" (Kulvicki 2008, 4).

The core of the argument, for Pasnau and Kulvicki, lies on colour analogy. Sounds are usually thought of as "transient" as opposed to colours that are "stable properties" of the objects that possess them (Dokic [2007] thinks precisely this while theorising on the opposition unique-repeatable). The key claim is the following:

> As objects still have their colours in the dark, they also "have" sounds even in the vacuum or without vibrating, those sounds cannot be heard.

Kulvicki (2008, 5) considers that objects have "resonant modes," dependent on their material structure—remember the plastic beer bottles—that cause them to vibrate. Objects are *disposed to* vibrate when "thwacked." Here Kulvicki is getting closer to the standard conception of dispositions through the lens of conditional analysis. The 'thwack,' a way of imparting energy to the object (Kulvicki 2008, 9), is the stimulus condition; the sound made—seemingly—, its manifestation. But having a sound is not the same as making it. It is easy to think of objects that make sounds that they don't have: a speaker, for instance. Appealing to colour analogy, one might say that a projection in the movie theatre is showing ("making") coloured images, when the colour, indeed, *isn't there*. Notice how, by switching to colour analogy, we employ different verbs.

This possession of sound, so to speak, represents, for Kulvicki, a stable property that licences the possibility of dispositional talk, although he does not draw beyond on the literature. All this would lead us to identify the expression "had sound" with dispositions, and that of "made sound" with the manifestation, which, formulated as such, is a rather circular argument. However, there are alternatives specifications.

A more elaborated and/or explicit depiction on the dispositional account for sounds is that of Roberts's (2017), who relies at large in the property view for colour. Having divided the views between property and non-property, Roberts groups eleven possible views within PV, according to their potential compliance with three features: being dispositional or not dispositional (thus, categorical); being reductive or non-reductive; being relational or non-relational. Something not clearly explicit here is whether not having some of the features mentioned by Roberts means that they *necessarily* lack them.

A first interesting aspect is that, unlike Pasnau and Kulvicki, he does consider a non-dispositional possibility for PV. Here 'non-dispositional' means categorical, for which one of the options is vibrationism (that is, appealing to vibrational structure), which is also a reductive view. As for the dispositional ones, they have revolved around the possibility of wave dispositionalism (that is, the overt disposition to produce an acoustic wave) and vibration dispositionalism (like Kulvicki's thwack).

When we consider perceived sound (or sound appearance) things get, as usual, thornier: a conditional analysis like-spirit is still present, for here "*sounds are dispositions to auditorily appear in certain ways if certain conditions are met*" (Roberts 2017, 346). Here we have an internal sound dispositionalism and an external one. The difference is that the external one does distinguish between sound and apparent sound, thus enabling us to explain differences of change and constancy. However, apparent sounds seem difficult to conceive if not taken as experiences of sounds. Finally, on the possibility of connecting the dispositional and relational features, Roberts notices that they do not have to come necessarily together. This becomes an important issue to discuss the differences between sound, in a phenomenal sense, and the objectual sound.[12]

[12] Talking about 'internal' and 'external' could lead us to hasty associations. For instance, we could say that the former matches, at a certain extent, with PV1, while

So far, in Roberts' treatment the dispositional account is more complete. He concocts these varieties in a hypothetical fashion, as they are not being argued for currently. Kulvicki would happen to be a vibration dispositionalist, viewed from this lens.[13] Another issue to bear in mind is that he depicts sound dispositionalism in the fashion of conditional analysis and, even more, he is aware that this way of dealing with dispositions might face theoretical obsolesce. Yet he does not appeal to alternative views on dispositions. In the following sections, I highlight the so far implicit elements of sound dispositionalism *à la façon* de Lewis and I also undertake its shaping into a more current discussion.

3. A dispositional view, from conditional analysis to potentiality

A word at the broader level of the discussion on dispositions is required. Dispositions, as I have said, are a genre of properties. The other genre is that of categorical properties. The main difference lies in the fact that dispositional properties are instantiated *under certain conditions*, while the categorical ones are instantiated in *all conditions*. It is common to think, as well, that the latter are constant, while the formers are not; that the latter are observable, while the others are not (if not being manifested at the

the latter with PV2. But that is not exactly the case, because the focus of the features sorted by Roberts is not aimed at bestowing the property either to objects or subjects, but on how they both relate to sound appearance. The same caveat goes for trying to associate this to the externalist/internalist discussion within the philosophy of mind and language. I do not mean that these aspects should remain separated from the features outlined here, it is just that so far the discussion is rather narrow.

[13] The whole spectrum proposed by Roberts encompasses the following options: non-relational primitivism, vibrationism, disjunctive vibrationism, disjunctive wave/vibration dispositionalism, primitive appearance relationism, reductive appearance relationism, vibration relationism, apprearance sound dispositionalism, wave dispositionalism, vibration dispositionalism, as well as an unavailable view which would happen to be dispositional, non-relational.

moment).[14] This division, as fundamental as it is, roughly mentioned by Roberts' taxonomy, is usually cast aside in the debate on sounds. This, as seen in the conclusions, could be of major importance for anyone who favours PV's varieties.

In the big picture of metaphysics, Humeans and Anti-Humeans wage a battle concerning their understanding in the structure of the world. There are many arenas for this (for instance causality, modality, and observability/non-observability), being the nature of properties one of them. More concretely, the label "Anti-Humean" is employed while alluding to David Lewis's metaphysics, which strongly appeals to Humean supervenience, whose formulation goes as follows: "All there is in the world is a vast mosaic of local matters of particular fact, just one little thing over then another" and this has an impact in how laws are conceived: "The laws of the world supervene on the totality of local matters of particular fact" (Lewis 1986b: ix). If there is an accepted understanding on both sides it is that of Humean supervenience as the core of Humeanism and Lewis as its endorser.

Typically, Humeans defend categorical properties and Anti-Humeans, dispositional ones. But this is an oversimplification as the matter is, indeed, which of the two are the most fundamental. In this sense, two monist positions are on sight: either every sparse property (namely, natural properties) is categorical or it is dispositional. A middle ground could recognize that there are properties on each side. One can also accept dispositions (or 'disposition talk' *á la* Ryle), without committing ultimately to this. The opposite view would be dispositionalist realism.

This corresponds to a deeper review of our view on metaphysics and the philosophy of sounds and auditory experience could perhaps dispend with

[14] We should not understand this in a visualist form. Observables entities are those that we can perceive with any of our senses, in normal conditions; unobservables don't. Yet some unobservables are detectable by using certain instruments (subatomic particles, for instance) and some are not detectable but have rather an explanatory role (Chakravaty 2007, 14–15). There is, of course, a critical aspect in this, as being "non-observable" used to be an anathema for the empiricist *Weltanschauung*, although being non-observable does not constitute a reason to rule out dispositions anymore. As, for the strictly scientific point of view, there are many entities, like *quarks*, whose status in this sense is non-observable.

this. However, the difference could have some relevance while understanding the available dispositionalist projects and some falsifiability criteria.

Back to business, both Kulvicki and Roberts have drawn on a profile of the long debate on dispositions that depends on the conditional analysis. However, the standard view on dispositions has been discussed (Armstrong 1996; Martin 1996), criticised (Bird 1998), reviewed (Lewis 1997) and dismissed by some authors (Bird 2007; Vetter 2015). This warrants a concise revisit to the guidelines of the conditional analysis. Let us take a quick view on it. Following no other than Lewis (1997b), the *conditional analysis* states that:

> CA: Something x is disposed at time t to give response r to stimulus s iff, if x were to undergo stimulus s at time t, x would give response r.

In short, this is usually capsuled by the formula $D_{(S, M)}$, that is, the ordered pair of stimulus and manifestation (or response).[15] We can see how it fits the problem of sound.

Now, the disposition to sound would be given by the pair formed by a stimulus (eg. Kulvicki's 'thwack') and, on the other hand, a manifestation (either if it is the vibration or the wave, that is, vibration dispositionalism or wave dispositionalism in Roberts's terms). This looks simple and compelling. The conditional analysis picture can be, however, more specific. For instance, it can distinguish between covert dispositional property names or nouns (such as 'fragility', 'solubility', etcetera); covert dispositional predicates in adjective form (such as fragile, soluble); overt (canonical) dispositions descriptions 'the disposition to M when S'; and overt dispositional predicates '*x is disposed* to M, when S' (Bird 2007, 18). Given that sound

[15] Although this line of argument is immediately associated to Lewis, we had to go back a bit earlier to authors like Carnap and Ryle. Carnap (1936, 448), who introduces essentially the same definition but with a more elaborated formula, is concerned that disposition-terms don't enable semantic reduction—a 'dogma' later criticised by Quine (1961). Ryle (1949, 31), on the other hand, identifies dispositions' ascriptions as those that allude to a particular change when an object is under certain conditions. These semantics are known as the "simple conditional analysis" (Choi and Fara 2016). All this is to say that conditional analysis is not entirely Lewis's doing. His attention was dedicated to its reformation, rather than the simplistic formula.

does not commonly figure as a disposition, it is perhaps artificial to say that we can easily appeal to "sonority" or "sounding,"[16] whereas the former is, in the ordinary language, describing a conduction quality of an object (something you could say of a musical instrument or a performer of a musical instrument for example), the latter has been used to describe the manifestation. It seems that sound ought to be overtly formulated as "the disposition the sound" or "x is disposed to sound iff... certain conditions are met." The conditions could be, in a first moment, the object having resonant modes or a vibrational structure and a medium of propagation.

A specification that is worth bearing in mind is that pertaining single and multi-track dispositions. A disposition D can have multiple manifestations: a fragile glass can break, but it also can just get cracked and so forth; or, as Ryle's (1949, 107) example goes, the disposition of knowing French can be manifested in being able to speak it, to listen to it, to write in French and the like.[17] As it turns out, we have myriads of multi-track dispositions and one could say that thinking of dispositions otherwise would be mistaken.[18] Let us portrait this feature for sound. Sounds' stimuli can be very diverse, which is already noticed by Kulvicki (2008, 9). In this sense, to give a dispositional analysis account for sounds while regarding them as dispositions had to be exhaustive. This can make us doubt on whether the definition of the stimuli of "when thwacked" is correct, for if you smash, make explode and so on, you will also have a sounding object.

Manifestation can diversify as well. Let us think of a musical instrument like the violin. A violin player knows that she can obtain different 'colours' depending on how she pulls the bow. If she bows near the bridge then we

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[16] Audibility is also used in the debate, but I will stress the difference below.

[17] While Ryle is the first one to brig up this idea, we owe its systematic treatment to Bird (2007, 23), who elaborated on all the combinations of stimuli-manifestation. His work on how such characterisations can, or not, account for fundamental and pure dispositions, leads him to proposes and a typology where we have simple stimulus, conjunctive manifestation; disjunctive stimulus, simple manifestation; simple stimulus, but conjunctive manifestations; conjunctive stimulus, and a simple manifestation.

[18] For a comprehensive argument on how and why most if not all dispositions are multi-track, see (Vetter 2013b).

obtain a very specific and a bit harsh effect, a technique known as *sul ponticello*; if she bows near the fingerboard, we have a rather sweet effect, known as *sul tasto*. If she plucks the strings instead of using the bow, we have *pizzicato*, and so on. Then the manifestations can be diverse and although in these cases it seems that they connect one-to-one with the diversity of stimuli, that is not necessarily the case. We can point to different examples. If you 'thwack' someone on the nose, maybe you would hear a sneeze, maybe not. Musical instruments are useful examples for all this, but they can be misleading in one particular aspect: unlike other objects, they are *supposed to sound*, sounding is what they are meant to do. When we turn to 'ecological sounds,' that disposition (taking for granted, for the sake of the argument, that they are such) can go along other with other dispositions, let alone multiple manifestations. As I will elaborate in the conclusions this leads to the problem of parasitical dispositions, which might represent a possible objection to sound dispositionalism.

This is not where the story ends. As it is known, there are plenty of counterexamples for the conditional analysis. Such is the case of masks—i.e. entities that prevent the manifestation even if there is a disposition D and a stimulus *S*—and mimics—that is, when we have manifestations and stimulus but without the disposition D. The typical counterexamples for CA in the case of sound can come in two guises depending on how the manifestation is understood: in a vibrational sense or in the phenomenological sense, that is, as the possibility of having, or not, the experience of sound.

A clear-cut case of a mask is that preventing the vibration in the medium of the disposition-to-sound when actually having the stimulus. A silencer or a pillow in the case of a firearm is a mask in a vibrational sense. Masks, as seen, may vary in their masking success. The other direction for masks is the phenomenological one. Maybe there is vibration, but there is some physical obstruction in one's ear tragus that prevents you from having the experience-of-sound. Or if this is still too objectual, we could refer to some reactive response within the auditory system. For PV1 this is the mask and not the former; whereas for PV2 the emphasis would be in the former.

With mimics it happens in a similar way. The manifestation is produced either in spite of the absence of the disposition in the object to give away

a characteristic sound; or in absence of the subject's disposition to have an experience of sound. This would happen via the intervention of a mimicker, like the famous case of 'The Hater of Styrofoam' (Lewis 1997): a Styrofoam dish would break when struck by intervention of the mimicker (i.e. The Hater of Styrofoam), even though the Styrofoam dish lacks that disposition.

We may envision the example of a guitar, which is not supposed to sound like a cello with pizzicato when plucking a string, yet via the intervention of some mimicker, let us call it 'the Cello-*pizzicato* lover,' it would sound like a cello with *pizzicato*. Can we apply the difference between making and having sounds like in the case of the speakers? I think so. However, 'orphan manifestations' eventually raise some concerns (see §4). Some other counterexamples, like that of finks, are considerably more difficult to create for the case of sound than the already mentioned, and so far this is enough for contesting the conditional analysis. Conditional analysis, in order to respond to each of these cases, can reconfigure over and over with *ceteris paribus* clauses and with endless specifications that, in the long run, show that going through dispositions takes a lot to produce the correct statements, if any. This line of response is identified by Manley and Wasserman (2008, 63) as the strategy of 'getting specific.'

Parsimony and simplicity are the desiderata that critics of conditional analysis have endorsed. A glass is still fragile *even if* nobody attempts to break it; an apple is edible even if no one is willing to eat it, and so on. In this fashion, Kulvicki already formulated that an object has a sound even if not sounding (or even if it is in a vacuum), and there is no need of going through a conditional analysis to state the disposition as it is.

For some reason, however, sound dispositionalism has not gone beyond standard conditional analyses to other current views. In order to advance this view, I deem necessary to explore other options. One of those options is that of *potentialities*, which is extensively explored by Barbara Vetter (2015).[19]

[19] There are other works by other authors (Bird 2007; Molnar 2003) and Vetter herself that go in this direction, yet it is the one mentioned which fully develops the project.

Joining in the attack on conditional analysis seems to represent a first obliged step. Noting, however, that objects still have their dispositions regardless of the manifestation—i.e. a glass remains fragile even if no one breaks it—enables further considerations. The first one concerns us directly. In most cases we use the suffix 'ity' points to dispositions. And it concerns us for we still don't know which is the candidate for sound in such fashion. The second consideration is that some objects having a disposition seems context-sensitive. Since there can be cases of things breaking that are not or could hardly be considered as 'fragile,' as well as people who get angry without being irascible, Vetter appeals, in a first moment, to the notion of 'easy possibility' (Vetter 2015, 72). Yet it is unclear whether this commits us to possible worlds—for instance, that we have to consider worlds where something is likely to break and to distinguish it from those worlds where it is not—and what the *relata* are (for saying that something is easy is likely to say that it is easier than something else).

In this spirit, Vetter switches from dispositions to potentialities: "*I propose that we call those properties which form the metaphysical background for dispositions ascriptions potentialities*" (Vetter 2015, 84). Let us go back to the case of a rock. Intuitively, we would not say that a rock is fragile. Making that ascription entails the definition of a context, in a world where maybe there is a different force of gravity and things of the sort. The ascription of fragility, a typical disposition, is, as said before, context-sensitive. Yet a rock *can* break. Both a glass and a rock—one of which you can ascribe fragility but not the other—*can break*. Therefore, we can appeal to a *potentiality*, which, if you like, can be expressed with the noun 'breakability' (which is not commonly used, if used at all). The difference with fragility is that fragility refers to a point of the spectrum where an object can break—you can fix the context using modal-talk, or by alluding to 'easy possibility'; whereas breakability covers the whole spectrum from a piece of diamond to a thin glass. What we commonly refer as the disposition is the maximal degree in the spectrum, which attaches the suffix 'ity' enabling linguistic intuitions. Having a high degree of potentialities also explains manifestations. And, likewise, the rough picture indicates that having a sufficient or high degree of potentialities goes against having counteracting potentialities—which halt or prevent manifestations (Vetter 2015, 99).

Concerning modal aspects, a full discussion is beyond the scope of this article, but there is a token of relevance that is worth mentioning. Potentiality, as portrayed by Vetter, is still a sort of modality, but it is *localised* in the object in contrast with metaphysical possibility, which is *non-localised* (Vetter 2015, 203). Hence, rather than formulations such as "it is possible that x", we can appeal to "x can M."[20]

It is clear by now that Vetter offers an account of potentiality that tries to be independent of other *explanans* that come about when the manifestation of dispositions/potentialities is exerted. Many of the things we come to think of as definitional of potentiality are interacting factors of the exertion of the potentiality (its manifestation or production), and yet not essential. So there is no need to appeal to the whole conditional analysis conceptual package in order to interpret potentialities, as it happens with change and causation. Of course, change and causation may play a role in how the potentiality is exerted, but they are not definitional.[21] If anything, we can explain causality *via* dispositions (Chakravarty 2007; Vetter 2015, 99). The

[20] Vetter (2013a) claims that it is possible to express potentiality regardless of possible worlds. The reasons on why linking them was part of a canon is yet not as clear. And that happens as well with causality, Humeanism, conditional analysis and supervenience, which seem to be somehow entangled. This entanglement appears also when discussing modality. Lewis is well known for being, among other things, a modal realist (Lewis 1986a). In his quest for arraying his picture of possible worlds and to look for alternatives to modal operators, he first proposed a counterpart theory (Lewis 1968) and then found that supervenience is a convenient tool ('the right one') for his modelling throughout possible worlds (Lewis 1986a). In contrast, Vetter (2011b) identifies Kit Fine's efforts and hers on the side of 'new actualism,' which happens to be confronted with that of Lewis. Both sides could agree, however, on their search for new tools to reflect on modality (Lewis *idem*, Vetter 2013a). At a point, she uses modal talk identifying 'possible worlds' as heuristic (Vetter 2015). For her, new actualism and 'anti-Humean' metaphysics are on the same page (Vetter 2011b, 745). I am not entirely sure these associations apply at large concerning Humeanism/modal realism and actualism/anti-Humeanism, since the basic idea of supervenience doesn't need *ab initio* modalities (either with typical modal operators or with Lewis' counterpart theory).

[21] For a detailed account on how and why we should avoid causal construal in dispositional explanations without going through modalities the way Vetter does and by taking into considerations epistemological aspects see Gurova (2017).

first rebuke of a certain idea of foundational causality is that of rejecting conditional analysis whenever the stimulus is a cause, and the manifestation, an effect (Vetter 2015, 96). This does not mean that potentialities are dissociated from causal schemes. But not even in all cases manifestations have causes attached. Vetter mentions the possibility of spontaneous reactions.[22] So it happens with change: a potentiality may remain as it is and, even if that is rare or uninteresting, they do exist.

Going back to sound dispositionalism, we can think of sound as a potentiality. Typically, the acoustic spectrum covers human perception thresholds according to wavelength frequencies. Vibrations below of 20 Hz, like those of earthquakes, are considered infrasonic; whereas those above that threshold, like a dog whistle, are known as ultrasounds. It is interesting that the disposition to sound does not consider a maximal degree of frequency, but rather to be located at a specific range within the spectrum. This might lead us to reconsider the idea of associating a typical disposition with the 'maximal degree' in Vetter's account. Since this perspective also frees us from the chains of linguistic intuitions and it is context independent, we could cast aside for a minute the concern of not finding a suitable noun with the suffix 'ity'. We could brand it as *acoustic potentiality*.

So far, I have said very little on how this relates to the perceiving subject or how and why we can consider or rule out other 'ity'-nouns for naming this acoustic potentiality. A last feasible element that can be addressed with the new conceptual device at hand is that of *loudness* and, presumably, *loudability*. That would be certainly a gradable potentiality. One could wonder however whether we should substitute acoustic potentiality for this. I think that should not be the case, since loudability refers to an audible quality of sound. This could give place to a known objection as the 'property of properties,' which I will address in the next paragraph. For now, it suffices to say I do not take this as a lethal objection against sound dispositionalism.

Potentiality's basic elements have been introduced (i.e. gradability, context-independence, localised modality) and how we can think of sounds with

[22] Vetter (2015, 98) mentions that for a dualist philosopher getting angry could be a spontaneous affair, rather than the outcome of a sufficient cause.

them. Now some auxiliary elements may also help us to have a more complete picture. I would add only two: the difference between intrinsic and extrinsic and the idea of joint potentialities. An intrinsic property is contained in the object and it does not depend on any outer conditions. Presumably shape can be such a property; while properties such as being "taller than you" are relational and, therefore, extrinsic since they depend on external objects, conditions, and so on.[23] As for joint potentiality, its formulation goes in hand with that of extrinsic and intrinsic potentialities. An orchestra, for instance, shows the plurality of potentialities of each musician for playing a particular instrument. Another example is that of a key, which has the potentiality of opening a door. This is a useful token, because it points to both joint potentialities—the potentiality of a key to open a door, and the potentiality of a door to be opened—and to the difference between *intrinsic* (the potentiality of opening a particular door) and *extrinsic* (the potentiality of opening a general type of door, regardless of that type actually existing) (Vetter 2015, 124).

In order to implement some of the novel elements mentioned here, we have to go back to one of our initial hindrances: that we do not have an intuitive candidate attaching the suffix 'ity' for depicting sound as a disposition. In an objectual sense we could point out to 'sonority'. Although 'sonority,' in certain contexts, could allude to something else than the "disposition/potentiality to sound," when, for example, we say that:

"The sonority of Tchaikovsky Hall is better than Carnegie Hall"

Which is the same—imprecise and folk—usage we have for "acoustics." In this case we are actually referring to the disposition connected with reverberation of a space. Now, in spite of already having a more compelling idea of an *acoustic potentiality*, there is another candidate that comes around, which has, though, a slightly different character. Such is the case of 'audibility,' which is repeatedly used in the literature on the philosophy of sound's literature (for instance in O'Callaghan 2011, 400).

[23] Dispositionalists discuss, however, whether extrinsic dispositions are adequate, for the canon used to be that they were all intrinsic (for instance Molnar 2003). Here I will just assume we can include them. For reviewing a comprehensive plea for extrinsic dispositions, see (McKitrick 2003).

So far, the discussion has remained in a distal sense, that is, it portrays the property as objectual and that has the advantage of bracketing perception, which is a difficult issue in the philosophy of sounds. Albeit difficult, it is nonetheless decisive and that is probably the reason why sound has been traditionally considered a secondary quality. Framing audibility in this sense seems not only pertinent, but the very way to address dispositions and potentialities in the philosophy of sound. Audibility and sonority are extensionally the same, the difference lies in the fact that the former is addressed in a merely objectual sense, but that is a rather narrow picture that does not accurately describes sound's nature as a secondary quality. I can address this topic only now that I have elaborated on the adequate conceptual elements to depict its dynamics. One of the mentioned elements suits perfectly the occasion: joint potentiality (Vetter 2015, 2019b). In this case we have more than one actor in the circuit: the sounding object, the hearer, which is given also in a spectrum of frequency concerning the audibility/inaudibility of a vibration. Audibility jointly acts, thus, with at least other two potentialities: the one bestowed on the hearer, which is close to what audiologists describe as "hearing capacity" when, for example, describing the use of audiograms (Parker and Parker 2004, 76), and the vibrational potentiality of the object. Having a sound is, thus, just a fragment of the whole picture of a jointly dispositional acting scheme. From this new perspective we do not have to think of the *medium* as a condition in terms of the conditional analysis, but rather as an entity that provides for a joint potentiality.

Besides, Vetter's approach offers yet another element to understand dispositions; a remaining problem in the philosophy of sound and auditory experience is that of sound individuation, a problem 'infamously difficult to resolve' (O'Callaghan 2007, 64). From the point of view of potentiality, a disposition is individuated by its manifestation, full stop (Vetter 2014, 752). As we have dispensed from dealing with change, causation and modality, being sound a disposition/potentiality, the problem of its individuation is no longer a great concern. This will prove even more relevant while reviewing the objections raised against PV and sound dispositionalism. Taking stock, even if this picture is, as I believe, more complete than the one offered by the authors who have pursued sound dispositionalism, it still faces challenges that I deem difficult to sort out, as I elaborate below.

4. Objections against the dispositional wiew, known and new

Objections to the dispositional view so far have been directed mainly against Pasnau and Kulvicki and, curiously enough, they do not consider the structure of the conditional analysis of dispositions nor do they focus their criticisms on the internal aspects of dispositions themselves. The goal of the critique is usually oriented towards showing that the ontological choice they make is more compelling, so they rather pick it on problematic aspects of the theory. Thus, although there are particular objections, we still lack a robust systematic critique.

Casati and Dokic (2014) notice several objections of this nature. The first one is that our ordinary language does not recognize those uses of sounds (Pasnau [1999, 310] also stresses this). However, since the first lines of this paper I show how there is an ordinary and intuitive way of expressing that something "has a sound" and that, as a matter of fact, points out the main issue: their dispositional nature (iff, of course, sounds happen to be dispositions). A common philosophical strategy is to appeal to the intuitive nature of ordinary language. However, the reasons why philosophical concepts should accommodate to ordinary language, and to what extent, are a matter of debate. A reason on why this remains at issue may have to do with the problem of individuation and the assertion according to which "sounds are particulars".

O'Callaghan (2011) has also raised some important objections. A coincidence he has with Casati and Dokic is that of pointing to the "many properties problem" (O'Callaghan 2011, 378). If sounds were properties, the audible properties we usually attach to sound (and mostly to musical sound), namely, timbre, pitch, and loudness or intensity would be dependent or second degree. In any case, O'Callaghan anticipates a complex property-like response.[24] However, in this scenario and appealing to parsimony, he concludes that EV fares better. In fact, any view that holds that sounds are particulars would fare likewise, so it is not a virtue unique to EV.

[24] Theorising about hierarchies while dealing with properties and their inter-array is not uncommon to metaphysics. An interesting view on this dealing directly with dispositions and powers is that of Molnar (2003).

Another problematic issue is that of change. Typically, in metaphysics properties are not taken to be subject to change, the way individuals are. With O'Callaghan (2011, 379) it is unclear whether he concurs to this, since, after emphasising that sounds are concrete particulars—not object-like, but rather event-like—he claims that although both sounds and objects survive change, they differ in the fact that sounds need of time for unfolding and happening. Moreover, individuation of the formers does depend in the patterns of change in their audible features.

Concerning change, Pasnau (1999, 319–20) does not grant that sounds are subject to change. Much of the evidence we have of change in sound, he says, depends on our perception. Something similar happens with the perception of size: we perceive things to be bigger or smaller in relation to our proximity to them, the same happens with our perception and 'measurement' of intensity, for which, in his opinion, "*sound itself remains unchanged*."

Not all supporters of PV think accordingly, Roberts (2017, 341), for instance, gives an example on how a change of colour could be possible pointing out to the intensity of colours in a strange colour world.[25] The same, presumably, could be exemplified for sound: the marker for intensity would be loudness. Actually, it is easier to imagine qualitative change in sound than in colour. While playing string instruments, a change in pitch

[25] It goes as follows: "Imagine a world in which all objects were (mostly) transparent but when caused to vibrate suddenly became colored and would exemplify one color after another for some time before again becoming transparent. The exact colors objects would exemplify would depend on the type of object and how much it vibrated. For example, dense objects would exemplify different determinable colors on average than less dense objects, and objects would exemplify different determinate colors of the density-determined determinable color dependent on how much they were vibrating. If a very dense object were caused to slightly vibrate it would become light red, then a lighter red, then lighter, then white, and then the white would fade and the object would again be transparent, and if a less dense object were caused to vibrate lightly it would become a light blue, then a lighter blue, then lighter, and then white before fading back to being transparent, and if the object were caused to vibrate more heavily it would become a dark blue, and then a lighter blue, and lighter, then white, and again the whiteness would fade to transparency" (Roberts 2017, 341).

can occur when using the technique known as *glissando*, or while simply tuning the instrument; a flute can produce in a note a considerable increase in intensity.[26]

By linking confronted views on how sounds survive, or not, change with compliance to ordinary language, Cohen (2010) notes that both views—that is, survivalist and non-survivalist—can be both acceptable, for which we should not use this as a definitive criterion.

The last and main objection is that which actually could undermine any sort of PV: the claim according to which sounds are particulars. This comes in two fashions: the first one is appealing to countability; the second one is by invoking experiencing particulars. The bedrock of these arguments goes like this: particulars have features that arguably properties do not. So, if some of these traits can be encountered while addressing sounds, it is unlikely that they can be taken as properties. Now, there are two considerations here: either it is impossible for properties to have these features, because they are exclusives for particulars; or it is only that they are present in particulars, but not necessarily in an exclusive sense.

Countability is also connected with this particular-like sort of objection: you can count particulars, and you can count sounds, *therefore*, sounds are particulars. Arguably, you cannot do the same with properties and, *therefore*, sounds are not properties. Here is a disanalogy with colour: you cannot count 'colours,' which is taken to be a property; but you can count sounds. Therefore, sounds are not like colours and they are not properties. Taking nonetheless the challenge, one could say that what is countable in that sense is the manifestation, which shows the way in which any disposition is individuated (Vetter 2015, 35, 108). On the other hand, sound could even be used as a mass-term as well (Cohen 2010; Méndez-Martínez 2019). Finally, in Roberts' 'strange colour world' the manifestation of a colour can be also the number of times you switch the light on and off.

This gives an answer to the question raised by Casati and Dokic: "What are the *particulars* that you hear when you hear something?" So, the property theorist could simply answer: property manifestations.

[26] Changes in timbre seem more difficult to use as an example, but theoretically we should not rule them out.

So far so good, these known objections and the responses to them are all very well, even if some rely on desiderata (parsimony, concordance with ordinary language) whose relevance could be queried. A general and systematic objection that could counter PV and sound dispositionalism at large is still pendant. I would like to posit here what, in my view, should be its main guidelines.

Despite philosophy's different standards and historical development patterns to those of science, a criterion that comes in handy while examining an argument is that of falsifiability. In a Popperian spirit we could ask how sound dispositionalism could be proved false. There are several goals that can be assessed and, thus, falsified. The broader one is that which states "sounds are properties" (T1). A way to falsify this out is to deny that claim:

AT1: Sounds are not properties

EV, WV and claiming that sounds are particulars seem to entail AT1. However, just stating that they are particulars does not constitute an argument in and of itself, it requires burden of proof. That is a difficulty we encounter with O'Callaghan's (2011) arguments against PV, for he heavily relies on the characterisation of sounds as particulars (not object-like, but event-like), implying that those features could not belong to properties. However, as shown above, those features can be predicated of disposition's manifestations, as already said. Continuing with the—hypothetical—global systematic objection, if sounds were properties, then we would have to decide between PV1 and PV2. Asserting one discredits, seemingly, the other, and, thus, within PV, PV1 could be the antithesis of PV2 and *vice versa*. It is important to notice that this would be so only if we have overcome the challenge posit by AT1. So far, I have argued that, if they are properties, they are objectual properties, which, naturally, are enabled by our perceptive capacities.

If the argument develops through the path of objectual properties (namely PV2), then there are also contesting views. A fundamental one is, as mentioned earlier, that of choosing between categorical and dispositional. In this sense, either one:

- Chooses categoralist monism in order to advance this view or to discredit dispositions

- Chooses dispositionalist monism in order to advance this view or to discredit categorical properties
- Chooses a mild pluralist or dualist position that admits both; yet focus on one of the two.

Naturally, if one were to choose a monist position it would have to be followed to its last consequences, which could undermine or even compromise the project. Categoricalism usually tries to undermine not only dispositionalist monism, but dispositions themselves and, thus, to challenge dispositional realism (that is, the stance for which dispositions do exist). Turning a blind eye to monism, a pluralist *pax metaphysica*, could engage with their preferred type of property without troubling dispositionalist talk or categoricalist talk, depending on one's focus. I believe that in the philosophy of sound and auditory experience we face such a situation and, hence the goal is far from asserting a dispositional view in detriment of a categoricalist one. And that is fine. While there is nothing intrinsically wrong with this, it would be better to keep in mind the falsifiability routes for dispositionalism.

Finally, and narrowing the scale to those views that are not only PV, but dispositionalist themselves, the local theory choice seems to boil down to two options: conditional analysis or potentiality. Here the choice is not so simple, as conditional analysis is committed to more than it states in the analysis itself within the Humean project. However, there may be theoretical scenarios where both ways of framing dispositions are admissible. For instance, one could accept potentiality, and say that only dispositions (that is the maximal degree of a potentiality) can be framed with some reformed conditional analysis, but not the whole spectrum. To my knowledge, there are no claims in this direction, but maybe there is room for pluralism of this kind.

The advanced picture I offer here is not bulletproof and we could conceive extra hindrances to its theoretical development. Let us consider new objections. Even though Kulvicki underestimates the case of sounds made and not had as a *rara avis*, there are more cases of 'orphan sounds.' Consider the case of a thunder. EV has no problem in cataloguing these both as sounding sources and as events—and not even Kulvicki denies that

hearing informs us of the surrounding events. Many specifications are needed to frame clouds as objects. On the other hand, objectless or individualess properties seem to make no sense (Armstrong 1993, 433); although Galen Strawson (2011, 304) thinks differently. Now, it may be the case that thunders and all what is involved in the natural phenomenon of the water cycle is still a particular yet not an object-like one, but event-like, as O'Callaghan says. Granted. Still we could wonder what happens with manifestations, like orphan sounds, that are neither relatable to objects nor to dispositions. Therefore, orphan sounds just make a larger problem evident: that of lonely manifestations and mere happenings.

This leads us to the point where we can find most of the objections to dispositionalist theories, including those of sound dispositionalism: the way they relate to stimulus and manifestations and, thus, to its multi-track nature. Although conditional analysis has generally been abandoned in the discussion on dispositions and potentialities, the other aspects in the circuit that are linked to dispositions can still raise concerns. Here I would like to propose the idea of 'parasitical dispositions.' Something already considered in the formulation of multi-track dispositions is the possibility for a disposition to have multiple manifestations, and multiple stimuli as well. That is not new. In this sense, we can use the typical case of a glass' fragility. When breaking, however, the glass also sounds. There is a characteristic sound of a breaking glass that is familiar to most of us. However, either both dispositions go *in tandem*, or one is dependent on the other. This is what I have in mind with parasitic dispositions: the possibility that the disposition to sound *could be* the disposition of something else.

The notion of parasitical disposition is in need of a larger framework not only within philosophy of sounds, but also in the overall literature on powers and dispositions. Being a parasite is being a parasite *of something*. Thus, the idea implies a hierarchy that can be fixed bearing in mind an ecological array of how organisms perceive stimulus: sounds are relevant for animals that are either hunter or pray because they indicate something else than sounds *per se*. EV would refer right away to the causal relationship between sounds and its sources, but it is clear that from this side we have to look for an alternative. The combination of joint potentialities and Gibsonian

affordances (Vetter 2018),[27] for instance, may enable this approach. A parasitical disposition is one that has not affordances and yet it is instantiated with dispositions-potentialities that do have them. It is important to see that a parasitical disposition would not be a counteracting potentiality, which in the criticism of conditional analysis is presented as a 'mask.' We must conceive unperceived properties that do nothing. The fact that sounds don't happen to be in this category is an evolutionary making. There could be possible worlds, however, where sounds would not play such a role.[28]

Finally, an extra objection that follows the line of argument of 'things particulars have but properties don't' is that of parthood. Let's call this the *mereological*[29] *objection*. Although we certainly would not say that:

"Here is a sound. There you have half of that sound."

You can appeal to lengths and durations in the following sense:

"This sound lasted half the length of the previous sound."

Perhaps, this is something a sound engineer or a composer could say. Clearly, sound is not the sort of discrete entity you can halve, like an apple or a table, and there are two non-equivalent solutions to this: either you say that this is something that happens with events in general, which are particulars in the end—as O'Callaghan would probably argue; or as the property theorists (dispositionalist included) would do, one could talk about the theoretical mereology of properties' manifestations (as in Robert's strange world of colour). The topic, however, remains unexplored.

Up to this point, it is evident that the discussion on dispositions can contribute to the metaphysics and ontology of sound. It is in the best

[27] In Gibson's ecological psychology, an affordance is a habitat feature that *enables* an organism to do something: "a surface that is knee-high and sufficiently steady affords sitting on." Barbara Vetter (2018) has worked on bringing together the philosophy of potentiality and this approach.

[28] This resembles a Lewinsian idea: that of *idlers*, namely, properties that just manifest and 'do nothing' (Lewis 2008, 75). Perhaps our world is full of these things and it is just a matter of evolutionary serendipity that sounds happen to be relevant for so many species.

[29] Unlike O'Callaghan (2011), I do refer here to mereology in its classical sense: as the study of the relationship between parts and wholes.

interest of property theories to explore this possibility and face its consequences for, as I have shown, it has attractive theoretical features, albeit problematic. Not only it is worth reviewing for the property theorist but also for those accounting for EV or even WV. This is where my last advice goes. Although here I provide elements that can advance sound dispositionalism, there is maybe a good reason not to take this route in a reductionist way. By 'reductionist' I mean the ontological reduction of sound to the class of potentialities (and dispositions). This explanatory misplacement is a product of the aim of terminological reduction that looms in the views in SO. And this criticism is analogous to one of the main objections towards WV. For sure, acoustic waves *have to do* with the auditory phenomena but being part of the explanatory scheme does not imply the claim "sounds are waves." There is a sense in which much of the discussion can be arranged by means of specifying our usages of 'sound' in our explanatory schemes. Maybe there is room for everyone. Yet a difference here is that whereas acoustic waves' importance is undeniable in order to have the picture of sound, dispositions or potentialities require more justification.

Avoiding a reduction of this kind would allow the necessary distance from the problem noticed by Casati and Dokic (2014) concerning the collapsing or conflation of views, which are supposedly antagonistic.[30] In conclusion, dispositions or potentialities are potentially useful tools for the philosophical investigation of the realm of the auditory phenomena and they *may* be used in the discussion, but it is perhaps unwise to reduce and circumscribe the ontology of sound to the class of dispositional properties as it might be to do so with other classes (waves or events for instance).

[30] In particular, Casati and Dokic are aiming a critique towards the Relational Event Theory, which intends appealing to both the surrounding medium and the source, that is, articulating distal and medial theories. However, for these authors this view (which is O'Callaghan's arguably) "collapses unto" a medial theory when considering puzzling cases where an informational barrier prevents us to access a sounding object. In such circumstances, this theory, they say, ends up being plainly medial.

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