Questioning, Rather Than Solving, the Problem of Higher-Level Causation

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Abstract

In *Metaphysical Emergence*, Jessica Wilson recognises the problem of higher-level causation as "the most pressing challenge to taking the appearances of emergent structure as genuine" (2021: 39). Then, Wilson states that there are "two and only two strategies of response to this problem" (2021: 40) that lead to Strong and Weak emergence. In this paper, I suggest that there might be an alternative strategy—not opposite, but different in kind—to approach this difficulty. As noticed by Wilson, the problem of higher-level causation was formulated and made central by Jaegwon Kim. However, Kim's arguments were grounded on distinct metaphysical principles—including Alexander's Dictum and its analysis in terms of causal powers. Rather than following Kim's formulation and responding to the problem he raised in his own terms, a different approach may be to question the pertinence of the metaphysical framework in which these arguments were originally grounded. The problem of higher-level causation, in other words, might be less "pressing" if ontological emergence came with a less strict and univocal view of causal novelty and ontological relevance.

Keywords: Emergence, Alexander's Dictum, Causation, Causal powers.

1. The Troubles of the Nonreductionist

Jessica Wilson's *Metaphysical Emergence* (2021) is devoted, as the title suggests, to the analysis of metaphysical forms of emergence. Wilson's focus is on special science macro-entities, whose ontological and causal autonomy are issues close to her heart. She ascribes two features to these entities. First, they depend upon certain complex configurations of fundamental entities, being cotemporally materially composed by them. Second, despite this dependence, special science entities exhibit some ontological and causal autonomy, being "[…] distinct from, and distinctively efficacious with respect to, the micro-configurations upon which they depend" (2021: 2). Special science entities, in short, present both (i) cotemporal material dependence on micro-configurations, and (ii) ontological and causal

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autonomy. The coupling of these features provisionally defines metaphysical emergence because (i) and (ii) are real features of the entities at issue.

The compatibility between dependence and autonomy in special science entities, however, is a debated issue. This compatibility problem, indeed, corresponds to a generalisation of the more specific problem of nonreductive materialism highlighted by Jaegwon Kim. This issue arises from embracing both ontological physicalism (the claim that all is physical) and property dualism (the claim that psychological properties belong to a domain which is autonomous and irreducible to the physical one (1989: 32)). The topic that Wilson is addressing is a generalisation of Kim's problem because she is not just interested in *mental* properties and powers, but in a wider range of higher-level entities, such as cells, organs, trees, birds, humans, and so on (2021: 1). The autonomy of these phenomena, however, is under the same threat as the mental properties discussed by Kim, because recognising their autonomy requires solving the so-called "problem of higher-level causation".

The problem was first presented by Kim in 1989, when he argued that no physicalist worthy of the name can be a nonreductionist about psychological phenomena. Kim's analysis proceeds as follows. Nonreductionists accept physicalism. Hence, they accept the so-called "causal closure of the physical", i.e., the assumption that every physical event has a sufficient physical cause. This means that "if we trace the causal ancestry of a physical event, we need never go outside the physical domain" (1989: 43). Consequently, nonreductionists admit that physical events can have only physical causes. However, they reject eliminativism, and are therefore realists about mental properties. This entails that to grant a legitimate existence to mental properties, nonreductionists must find a causal work that is done by mental properties *qua* mental properties (we will soon see why, in Kim's view, it must be so).

Yet nonreductionists already subscribed to the causal closure of the physical, so they seem to come to a dead end: if mental phenomena exert a genuine causal efficacy, then the causal closure of the physical is violated (in addition to the problem of overdetermination, because the effect of a mental cause must have a physical cause as well). If the causal closure is respected, on the contrary, mental phenomena have no genuine causal efficacy and, consequently, no genuine existence. In light of this, Kim concludes that a physicalist has to be either a reductionist or an eliminativist, for she has to reject the distinct autonomy of the mental or the mental *tout court*.

Before turning to Jessica Wilson's presentation of the problem, a relevant remark is in order. Among the premises that lead to the nonreductionists' dead end, Kim briefly mentioned the idea that "to be a mental realist, […] mental properties must be *causal properties*" (1989: 43). Kim fully formulated this principle in a later paper focused again on nonreductionists' troubles with mental causation (2006). Here, Kim asks: "[…] what does the commitment to the reality of mental properties amount to? What is the significance of saying of anything that it is real?" (2006: 436). In Kim's opinion, the answer to these questions is provided by the British Emergentist Samuel Alexander, for whom "To be real is to have causal powers" (ibid.). Kim named this principle "Alexander's Dictum" and its importance within the problem of higher-level causation is evident. If the principle is rejected, entities can have a legitimate existence even without exerting causal efficacy. If the nonreductive physicalist has to give up her nonreductionism,

therefore, it is because of Alexander's Dictum. Let's now turn to Jessica Wilson's formulation and treatment of Kim's problem.

2. The Problem of Higher-Level Causation

As already mentioned, Wilson considers the problem of higher-level causation as "the most pressing challenge to taking the appearances of emergent structures as genuine" (2021: 39). The problem, also known as the overdetermination or the exclusion problem,[1] lies in the apparent impossibility, for a higher-level entity, to be distinctively efficacious in a world where every physical effect is supposed to have an equally physical cause. In this framework, if a non-physical cause is admitted, it follows that the same effect has two sufficient causes, leading to a case of causal overdetermination.

For Wilson, the problem presented by Kim can be exhaustively rephrased starting from six premises. Four of them—*Dependence*, *Reality*, *Efficacy*, and *Distinction* (1-4)—are claims about the nature of higher-level entities; the remaining two—*Physical Causal Closure* and *Non-overdetermination* (5-6)—concern the nature of causation. The premises are the following:

> (1) *Dependence*. Special-science features cotemporally materially depend on lower-level physical features […] in such a way that, at a minimum, the occurrence of a given special-science feature on a given occasion minimally nomologically supervenes on base features on that occasion.
> (2) *Reality*. Both special-science features and their base features are real.
> (3) *Efficacy*. Special-science features are causally efficacious.
> (4) *Distinctness*. Special-science features are distinct from their base features. […]
> (5) *Physical Causal Closure*. Every lower-level physical effect has a sufficient purely lower-level physical cause. […]
> (6) *Non-overdetermination*. Except for cases of the double-rock-throw variety, effects are not causally overdetermined by distinct individually sufficient cotemporal causes (Wilson 2021: 41).

Wilson notices that accepting the dependence, reality, efficacy, and distinctness of special science entities implies the failure of one of the two other premises, and the same can be said about the commitment to the last two premises: if both *Physical Causal Closure* and *Non-overdetermination* are accepted, at least one of the features of special science entities listed above must go.

To solve the problem of higher-level causation there are different strategies, each coinciding with the rejection of one or more premises of the list. In Wilson's opinion, substance dualism rejects *Dependence*, eliminativism *Reality*, epiphenomenalism *Efficacy*, and reductive physicalism *Distinctness*. All these strategies succeed in preserving *Physical Causal Closure* and the *Non-overdetermination* requirement, but they do so by weakening the ontological and causal autonomy of special science entities. Wilson's strategy, conversely, consists in accepting the first four premises about higher-level phenomena, alternatively denying the legitimacy of the other two premises. By doing so, she defines her two schemas for emergence. The rejection of *Physical Causal Closure* leads to Strong Emergence, while that of *Non-overdetermination* leads to Weak Emergence. As we will see in the next paragraph, the first produces a metaphysical position that is not compatible with physicalism, while the

[1] Wilson refers to Kim's (1993) and Merricks' (2003) formulations of the argument.

second allows for a position that is compatible with it. In short, Wilson accepts the structure of Kim's argument, but chooses to reject a different premise than the one chosen by Kim and builds her models of emergence starting from this move.

3. Wilson's Two Schemas for Strong and Weak Emergence

In her book, Wilson poses two key questions. The first is what is emergence, while the second is whether there are real cases of emergence in nature. To answer these questions, while curbing the detrimental effects of the problem of higher-level causality, she designs her two schemas for metaphysical emergence.

The forms of emergence she recognises depend upon the satisfaction of two conditions, the *New Power Condition*, and the *Proper Subset of Powers Condition*. The fulfilment of the first one leads to Strong emergence, while the fulfilment of the second one leads to Weak emergence.

3.1 Strong Emergence

The *New Power Condition* states the following:

> *New Power Condition*: Token feature *S* has, on a given occasion, at least one token power not identical with any token power of the token feature *P* upon which *S* cotemporally materially depends, on that occasion (Wilson 2021: 51).

In this case, to fulfil the condition, it is necessary that the higher-level feature *S* has at least one power that its lower-level base feature *P*, on which *S* materially depends, does not have. If this feature *S* has this new power, then that feature can be considered Strongly metaphysically emergent.

The point to clarify, here, is how the fulfilment of the *New Power Condition* leads to Strong emergence. The answer is that a feature having a new fundamental power cannot (by Leibniz's law) be identical to a feature that does not exert that power. The argument leads, therefore, to the ontological autonomy of the feature at issue. As for its causal autonomy, the argument is much the same. The higher-level feature having a novel power can produce an effect that its base feature cannot because the latter has different powers. Being therefore both ontologically and causally distinct because of the presence of a new power, the feature fulfilling the *New Power Condition* is Strongly metaphysically emergent. In Wilson's words:

> *Strong emergence*: What it is for token feature *S* to be Strongly metaphysically emergent from token feature *P* on a given occasion is for it to be the case, on that occasion, (i) that *S* cotemporally materially depends on *P*, and (ii) that *S* has at least one token power not identical with any token power of *P* (Wilson 2021: 53).

3.2 Weak Emergence

Let's turn to the second schema. The *Proper Subset of Powers Condition* states the following:

> *Proper Subset of Powers Condition*: Token feature *S* has, on a given occasion, a non-empty proper subset of the token powers of the token feature *P* on which *S* cotemporally materially depends, on that occasion (Wilson 2021: 59).

To fulfil the condition, it is necessary that the higher-level feature *S* has a proper subset of the powers possessed by the lower-level base feature *P* on which *S* one materially depends. If the feature at issue has this proper subset of powers, then the feature can be considered Weakly metaphysically emergent.

Similarly to the case of the *New Power Condition*, the fulfilment of the *Proper Subset Condition* entails both ontological and causal distinctness of the higher-level feature. Having different sets of powers, the higher-level and the lower-level features will be ontologically distinct by Leibniz's law and will produce different effects, having causal distinctness due to their different causal profiles (2021: 79). In Wilson's words:

> *Weak emergence*: What it is for token feature *S* to be Weakly metaphysically emergent from token feature *P* on a given occasion is for it to be the case, on that occasion, (i) that *S* cotemporally materially depends on *P*, and (ii) that *S* has a non-empty proper subset of the token powers had by *P* (Wilson 2021: 72).

3.3 How to Be Causally Effective?

As the schemas show, for Wilson it is possible to save the distinctness and causal efficacy of special science entities having (at least) one novel causal power—as in the fulfilment of the *New Power Condition*—or having "a distinctive set (collection, plurality) of powers" (2021: 79)—as in the fulfilment of the *Proper Subset of Powers Condition*. There are therefore two ways in which a higher-level feature—and a special-science entity—can be causally autonomous: it "may have more powers than its base feature", or, alternatively, "fewer powers than its base feature" (2021: 74). If the emergent entity has more powers, some genuine causal novelty appears and violates the Causal Closure. If it has fewer powers, no real causal novelty is involved, but the difference in features and powers had by the entity ensures its ontological and causal autonomy.

In Wilson's opinion, therefore, these are the only two ways in which a higher-level entity can be genuinely efficacious, and for this reason she thinks that every viable account of emergence offered by the literature can be rephrased in her two schemas, which represent the only two appropriate responses to the problem of higher-level causation.

4. Questioning, Rather Than Responding To, the Problem of Higher-Level Causation

In the first paragraph, I described the premises recognised by Kim as underlying the problem of higher-level causation. These are (i) ontological physicalism, (ii) mental realism, and (iii) Alexander's Dictum. These three premises give rise to five of the six premises listed by Wilson. Roughly, *Dependence* and *Physical Causal Closure* originate from ontological physicalism; *Reality* and *Distinctness* descend from mental realism; finally, *Efficacy* derives from the coupling of mental realism with Alexander's Dictum. The sixth premise, *Non-overdetermination*, is independent from the others and is the (unacceptable) consequence, in Kim's opinion, of nonreductionist assumptions. As already suggested, Wilson's and Kim's views about the problem of higher-level causation are structurally similar, even if they solve the problem differently, with Kim rejecting *Distinctness* and Wilson rejecting, alternatively, *Physical Causal Closure* or *Non-overdetermination*.

However, some details of these arguments can be questioned, and in this paper, I would like to focus on those involved with the acceptance of Alexander's Dictum. Specifically, there are three issues that need to be addressed. The first one concerns the Dictum itself: one may want to reject it and assume other criteria about existence. The second one is about the power-based interpretation of the Dictum: one may want to accept the latter, while considering its power-based interpretation as too strict. The third one is about the metaphysical underdetermination of the powers involved in the power-based interpretation: one may want to accept the Dictum and its power-based interpretation, while requiring a differentiation between microscopic physical powers and macroscopic emergent powers. In the next paragraphs, I will examine each of these issues, suggesting that a less strict and univocal view of existence and causal efficacy might render the problem of higher-level causation less "pressing".

4.1 Alexander's Dictum

The first issue is presented here for the sake of the argument, because I think that Alexander's Dictum is reasonable and convincing. I will start with a quick overview about it.

The Dictum is a reformulation of what is known as the Eleatic principle, which owes its name to the visitor coming from Elea who discusses with Theaetetus in Plato's *Sophist* (Oddie 1982). Towards the end of the dialogue, the Eleatic Visitor describes the so-called "battle of gods and giants" (*Soph*. 246e-249d), namely a dispute over the nature of being in which two contrasting views can be recognised. The first one is that assumed by the Gods, i.e., the friends of the forms, who are committed to their immaterial existence; the second, the Giants, are the "earth people", who only grant existence to material and tangible bodies (Assaturian 2021). The Giants' criterion for reality, which can be roughly formulated as "being is being tangible", poses a serious problem: if only tangible bodies exist, how can virtues or souls be accommodated in the resulting ontology? How can something like justice influence the behaviour of the individual, if justice has no tangible body? In this frame, the Eleatic Visitor tries to make the Giants' views more coherent, suggesting that their criterion for reality might be improved. In doing so, he enunciates the Eleatic principle, according to which everything that really is must possess some power or capacity ("τὸ καὶ ὁποιανοῦν τινα κεκτημένον δύναμιν", 246a). The Eleatic principle, therefore, suggests that being, rather than being equivalent to tangibility, is equivalent to having some sort of causal capacity.

Now, the principle (or the Dictum) seems reasonable and convincing because an existing entity unable to produce any sort of causal effects would be hardly conceivable. Still, one might reject it and assume other criteria for existence. Without going too far, while examining free will, Wilson writes that a good reason to take free will at realistic face value is our direct introspective access to it. The fact that we "experience ourselves as seeming to freely choose, in ways transcending any nomological (deterministic or indeterministic) goings-on" (2021: 278) is therefore enough for accepting the genuine existence of free will. Wilson states that "in the absence of good reasons to think that our experience of nomologically transcendent free will cannot be taken at face value, we are entitled to take this experience at realistic face value" (2021: 278). Direct introspective access, therefore, seems a valid criterion for the existence of free will and is different

from Alexander's Dictum, as different as other criteria that have been formulated during the history of philosophy—e.g., being tangible or admitting direct epistemic access, as we already saw, but also being indispensable to our scientific theories (Putnam 1979; Quine 1980), being robust (Levins 1966; Wimsatt 1981 and 1994), and so on. Alexander's Dictum, in short, is not the only reasonable criterion for existence, and admitting other criteria seems to make the problem of higher-level causation less challenging.

4.2 The Power-Based Interpretation of Alexander's Dictum

As mentioned, it is possible and legitimate to assume Alexander's Dictum, namely the principle whereby existence corresponds to the capacity of being causally efficacious. Kim's formulation of the Dictum, however, does not merely equate existence and causal efficacy in general, but rather being with the exertion of causal powers.

This stricter equation might nonetheless be problematic for at least two reasons. The first is historical. As already noticed, Kim states that in Samuel Alexander's opinion being is having some causal powers (2006),[2] but this attribution originated from a misunderstanding. In *Space, Time and Deity* (1920), Alexander expresses an anti-epiphenomenalist position on consciousness, stating that epiphenomenalism is to be rejected (among other reasons) because "it supposes something to exist in nature which has nothing to do, no purpose to serve, a species of noblesse which depends on the work of its inferiors, but is kept for show and might as well, and undoubtedly would in time be abolished" (1920: Vol. II, 8). Kim translates this passage into a power-based vocabulary, but this approach does not reflect Alexander's intentions, as his view of causation was closer to that of Hume than to that of Aristotle. For Alexander, in other terms, causation does not correspond to the exertion of causal powers, but to the relationship of continuity and succession that exist between different regions of Space-Time—the fundamental element of Alexander's metaphysical monism. In *Space, Time and Deity*, Alexander clearly expresses his aversion to the concept of causal power, which, in his view (as also in Hume's), cannot be admitted in our ontologies:

> If all we observe in external events is uniform succession, to impute to one of them a power to produce the other is a fiction, the fiction which Hume set himself to discredit. It may be serviceable anthropomorphism, but it is not science nor philosophy. If there is no power traceable in things, then there is none (1920: 188).[3]

However, Kim is not the only one attributing to British Emergentists some sort of theory of causal powers; Robert McLaughlin did the same in his well-known and

[2] See also Kim: "Prominent […] is the claim that the emergents bring into the world new causal powers of their own, and, in particular, that they have powers to influence and control the direction of the lower-level processes from which they emerge. This is a fundamental tenet of emergentism, not only in the classic emergentism of Samuel Alexander, Lloyd Morgan, and others but also in its various modern versions" (Kim 1999: 5-6).

[3] A little further, Alexander adds: "causality is not the work of power" (1920: 290) and then he goes on to say "The mischief of the conception that a cause has power to produce its effect is that it introduces some mysterious element of connection other than that of simple continuity" (Alexander 1920: 291).

influential paper about the rise and fall of British Emergentism (1992).[4] The problem with these misreadings is that the power-based interpretation, even if only sketched, is not metaphysically neutral (besides being historically inaccurate) and can be misleading.

On the one hand, therefore, the British Emergentists were not committed to a power-based view of emergent causal efficacy. On the other hand, this account of causation might not be the most appropriate for conceptualizing emergence, given its central role in reductionist—i.e., anti-emergentist—strategies. This brings us to the second problem with the power-based interpretation of Alexander's Dictum.

Starting from Kim's causal inheritance principle (1993) and arriving at Elanor Taylor's collapse objection (2015), the notion of causal power has played a pivotal role in strategies aimed at excluding the possibility of higher-level causal efficacy. Kim's causal inheritance principle suggests that higher-level causal efficacy is not genuine, but is derivative from the lower-level by means of the inheritance of lower-level causal powers:

> **Causal Inheritance Principle** (CIP): If mental property M is realized in a system at time t in virtue of physical realization base P, the causal powers of this instance of M are identical with the causal powers of P (Kim 1993: 326).

Taylor's argument (2015), instead, focuses on latent dispositional properties. In her view, higher-level causal efficacy is not genuine because the alleged causal powers of emergent, higher-level phenomena correspond to the dispositional properties belonging to the low-level components on which the emergent phenomena depend. These dispositional properties are latent when the components are in isolation, and their effects become manifest only when they are organised in complex manners: hence the illusion that these properties belong to a higher-level.

What I am suggesting here is that the concept of causal power is central to classic reductionist strategies and seems to already carry anti-emergentist implications. Its introduction into the emergentist debate, moreover, is recent and appears to be related to the recovery of the notion of emergence as an alternative view to contemporary reductionism and physicalism. However, this emergence *vs*. reduction battle is played out within the framework of the latter and draws upon its conceptual repertoire, referring to issues such as realisation, dispositionalism, causal inheritance, and so on. Reading—or re-reading—the emergentist debate in this contemporary key is not necessarily a bad thing, but it is important to recognise that doing so is not metaphysically neutral, nor is it the only approach available.

[4] See McLaughlin (1992: 20): "British emergentism maintains that some special science kinds from each special science can be wholly composed of types of structures of material particles that endow the kinds in question with fundamental causal powers. Subtleties aside, the powers in question emerge' from the types of structures in question". McLaughlin cites C.D. Broad, who indeed uses the term 'power' more than Alexander does. A careful reading of Broad's passages in which the term power is used, however, shows that the term is employed in a non-technical way. Broad, who is referenced by Alexander, similarly believes that causation is a matter of regularity, uniformity, and continuity between spatiotemporal regions (see Broad 1925: 454-56).

There are different interpretations of the Eleatic principle—Samuel Alexander and the British Emergentists provided at least one—and these alternatives seem to make the problem of higher-level causation less challenging.

4.3 The Metaphysical Underdetermination of the Power-Based Interpretation of Alexander's Dictum

While it is perfectly possible to accept both Alexander's Dictum and its power-based interpretation, describing emergent causal efficacy in power-based terms might lead to new problems, rather than solving old ones.

Admitting emergent causal powers seems to naturally raise questions about their nature, namely about what kind of powers they are and whether these emergent powers are different from non-emergent ones.

In the first chapters of *Metaphysical Emergence*, Wilson provides some characterisations of these powers by stating that they are fundamentally novel—this is the reason why Strong emergence is incompatible with physicalism. As for fundamentality, Wilson defines it in primitivist terms: the fundamental is simply what God had to create (2014 and 2021). Wilson adds, however, that a nonfundamental power is a summation or aggregation of already existing lower-level powers (2021: 48), so fundamentality is also defined in terms of compositional basicness: a fundamentally novel power is a non-aggregative power.

Fundamentality, however, does not exhaustively define higher-level causal powers, because microphysical causal powers (those possessed by the emergence base) are fundamental as well. At a first glance, therefore, higher-level causal powers seem to differ from lower-level ones simply by being at a different level.

Further information about these novel powers can be gathered in another passage from *Metaphysical Emergence*. Emergent powers may be intended as grounded in fundamental interactions that are different from physical fundamental interactions (i.e., interactions other than strong and weak interactions, electromagnetism, and gravity) (2021: 133).

These suggestions, however, do not really clarify the nature of these emergent powers, how they act, and how they are exerted by their bearers. Wilson simply states that Strong emergence corresponds to the fulfilment of the condition of having (at least) one novel causal power, but what this power is, is left programmatically undiscussed. For Wilson, that of power is an "operative notion [that is] metaphysically highly neutral" (2021: 32) and "no 'heavyweight' notion of powers or causation need be presupposed" (2021: 33).

Now, the absence of a precise description of emergent powers seems to indicate that there is no relevant difference, in Wilson's view, between lower-level and higher-level causal powers. In other words, it may be reasonable to assume that if there had been a relevant difference, Wilson would have highlighted it.

However, by leaving the power-based interpretation of causal efficacy metaphysically underdetermined and disregarding the hypothesis that emergent causal powers might be relevantly different from low-level ones, two suggestions emerge. First, powers are conceived as a sort of universal and undifferentiated currency for causal processes, regardless of the ontological domain in which they appear. Second, this currency is not "bearer sensitive". Even if emergent properties and entities are different from the properties and entities from which they emerge, the powers of the former are not relevantly different from those of the latter. Here, I use the word "relevant"—or "relevantly"—repeatedly because low-level and

high-level causal powers are obviously different in some way, but the crucial difference I am pointing out is not just any difference, but a difference in kind that might be able to weaken the problem of high-level causation.

By examining the nature of causal powers, for instance, it might be discovered that higher-level powers cannot really collapse, while lower-level ones cannot really emerge. Emergent and non-emergent causal powers, in other words, might simply be non-interchangeable powers of a different kind. Let's try to develop this hypothesis.

Traditional (non-emergent) causal powers are often intended as fundamental, (micro)physical powers. A classic example of these powers is the electron's charge, which is mentioned by several authors involved in the debate (Psillos 2006; Marmodoro 2010 and 2013; Engelhard 2010; Williams 2019) and has peculiar properties that are commonly—though not universally—attributed to powers: being fundamental, essential, intrinsic, intrinsically active, and productive. These features accurately describe many microphysical powers, but macroscopic powers seem more difficult to describe in these terms. Defining the electron's charge as a causal power, in short, seems simpler and more accurate than defining my ability to roller-skate as one.

Emergent causal powers, despite being sometimes intended as ontologically fundamental (Wilson 2021; Barnes 2012), are often conceived as nonfundamental, extrinsic, context-sensitive, and constraining (Thorpe 1974; Mitchell 2012; Gillett 2016; Onnis 2021). These properties appear to be not intrinsically causal but rather determinative in a different (perhaps weaker) sense. Carl Gillett (2016), for instance, defines the causal efficacy of emergent phenomena as a role-shaping, non-productive determination which he dubs "machresis". In his framework, machresis is a "non-powerful" relationship that does not involve the exercise of active and productive causal properties but constrains the already existing contributions of the latter, and in so doing determines reality in "making a difference" to the world. The most striking difference between micropowers and emergent powers would therefore be the intrinsic activity and productivity of the former and the extrinsic non-productive constraining capacities of the latter.

It should be noted that the previous analysis is a preliminary and brief examination of the possible differences between non-emergent and emergent powers. However, it might be useful to engage in a more thorough investigation because powers can easily collapse if they are understood as properties that can be indifferently instantiated at both higher and lower levels. Conversely, differentiating between micropowers and macropowers might make this collapse more difficult. For instance, let's suppose that the macroscopic causal powers exerted by a biological complex system require a biological complex bearer. In that case, a non-biological system or a biological isolated component could not instantiate those macropowers, which would therefore become non-collapsible.

Ultimately, overcoming the metaphysical underdetermination of the power-based view by recognising relevant ontological differences between micropowers and macropowers appears to be another promising approach to making the problem of higher-level causation less challenging.

5. Conclusions

In *Metaphysical Emergence*, Jessica Wilson recognises the problem of higher-level causation as "the most pressing challenge to taking the appearances of emergent

structure as genuine" (2021: 39). As I have attempted to show in this paper, the problem might be less "pressing" if emergence were related to a less strict and univocal view of existence and causal efficacy, and to a more detailed examination of the nature of causal powers.

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