In Defense of Irreducible Relations

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Abstract

At least since Russell, mainstream analytic philosophy has distinguished internal and external relations and acknowledged the existence of both. This seems in line with both the manifest and scientific images of the world. However, there is a recent deflationary trend about relations, which focuses on the truthmakers of relational statements in order to show that putative external relations are in fact internal, and that internal relations do not really exist. Lowe's posthumous 2016 paper is a thorough presentation of this line of thought. This article critically analyzes Lowe's arguments in that paper, and some related arguments in recent works. It finds them wanting and thus reaffirms the irreducible reality of relations.

Keywords: Relations, Universals, Modes, States of affairs, Ontology.

1. Introduction

Since the very beginning of his philosophical career, Russell famously gave center stage to external relations. In 1959, he thus recalls the origin of his long-standing battle in their favor:

> It was towards the end of 1898 that Moore and I rebelled against both Kant and Hegel […] Moore was more concerned with the rejection of idealism, while I was most interested in the rejection of monism. The two were, however, closely connected […] through the doctrine as to relations, which Bradley had distilled out of the philosophy of Hegel. I called this 'the doctrine of internal relations', and I called my view 'the doctrine of external relations' (Russell 1959: Chpt. 5).

A crucial ingredient of Russell's campaign for external relations was the apparently ineliminable role that they play in science:

> I do not believe that […] those who disbelieve in the reality of relations can possibly interpret those numerous parts of science which employ asymmetrical [external] relations (Russell 1924: 176).

Indeed, as we may put it, the scientific image of the world features all sorts of external relations, from the force and elasticity of classical mechanics to the

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mass-energy of relativistic field theory (MacBride 2020: §3). Similarly, the manifest image of the world appears to be ubiquitously replete with external relations: things are above or below other things, events before or after other events, people love or hate other people, and so on. In fact, internal relations themselves have their place in both images, though perhaps with some sort of ontologically diminished status. For instance, things are larger or longer than other things and in general have proportional relations of all kinds.

Despite occasional dissenters (see, e.g., Fisk 1972), all of this has been taken for granted in mainstream analytic philosophy since Russell's days. In recent times, however, it looks as if a new wave of dissidents is growing (notably, Mulligan 1998; Heil 2012, 2016; Simons 2016; Lowe 2016; Della Rocca 2020; Marmodoro 2022). Within this trend, a central *anti-relationalist thread* can be identified: what appears to be external relations are internal relations after all, and the latter should not be accorded any serious ontological status; they are no addition to being, as Armstrong (1997) would put it. Lowe's posthumous paper (2016) nicely summarizes this line. First, it discusses some internal relations in this deflationist spirit; in his words, they do not "really exist" (2016: §8). Then, it provides a list of the main kinds of putative external relations, and, for any such kind, it offers arguments that should convince us that such relations are not external after all. Lowe 2016 also re-proposes a traditional anti-relationalist argument, we call it the *location* problem, which especially strikes those who conceive of external relations in terms of relational modes (see below). All in all, Lowe's battery of arguments, especially if complemented with further arguments against the alleged externality of spatial relations by Heil (2012) and Simons (2016), nicely works as a foil for the doctrine of external relations. The supporters of the latter can renew their commitments, by showing how to resist these arguments. We wish to do this here. We also wish to argue that the ontologically deflationary view of internal relations is far from obvious; there are good reasons to reckon them as part of the ontological furniture.[1] All this should suggest that relations are irreducible in a double sense. First, putative external relations cannot be reduced to internal relations. Second, internal relations themselves are an irreducible ingredient of the world, at least of our world.[2]

The paper is organized as follows. In §2, we briefly contrast an ontology based on universals and states of affairs (Armstrong 1997) with the ontology based on modes that Lowe prefers and explain how the anti-relationalist line to which we react works equally for both such ontologies. In §3, we focus on the distinction between internal and external relations and argue for the reality of internal relations. In §§4-7, we discuss the putative kinds of external relations identified by

[1] MacBride (2016: §3) also reacts to the anti-relationalist thread. By focusing on Lowe 2016 in detail we aim at a more sweeping and systematic reaction. Keinänen 2022 can also be seen in part as a reaction to Lowe's 2016 anti-relationalist view, based on acknowledging relational tropes (see his §5), but follows Lowe in rejecting the reality of internal relations. Focusing on dispositionalism and structuralism, Ioannidis, Psillos, Pechlivanidi 2022 provides extensive criticisms of anti-relationism.

[2] The anti-relationalist thread is not the only line against relations that can be identified in this new wave. For instance, Della Rocca (2020) rests his case on a sweeping use of the principle of sufficient reason and of Bradley's regress, and Marmodoro (2022) on the plausibility as an ontological theory of her reconstruction of Plato's theory of forms. We have no space for a critical analysis of these works here, and we must leave it for another occasion.

Lowe and defend their externality. In §8, we consider and resist the location problem. In §9, the paper comes to an end with a summary of our results.

Regarding the location problem, the following is worth pointing out. Besides our wish to discuss all the issues presented in Lowe (2016), there are three further reasons why we need to cope with the location problem. First, some theorists nowadays conceive of (external and internal) relations as relational modes[3] or, in a similar vein, as non-transferable tropes.[4] Secondly, Lowe (2006) himself believes in the existence of modes. Thus, if external relational modes are as acceptable as non-relational modes, there is no reason not to admit the existence of the former. To show that external relational modes are as acceptable as non-relational modes, the location problem is the hardest problem to address. Thirdly, the location problem has a long-standing tradition as an objection against the existence of polyadic accidents (i.e., accidents inhering in more than one substance).[5] And polyadic accidents share with relations (both particular and universal) one crucial feature: they may 'be in' multiple entities at one and the same time.

2. States of Affairs Versus Modes

As is well known, Lowe is a supporter of a neo-Aristotelian 'four-category ontology', which involves as fundamental items universals, concrete particulars, kinds, and abstract particulars, or particularized properties, often referred to as "tropes" or "modes" (Lowe 2006). Lowe usually prefers to call them "modes", but uses both terms indifferently in the 2016 paper on which we focus here. We shall do the same, for, although we may distinguish between tropes and modes, for present purposes nothing much hinges on the distinction (unless otherwise indicated).[6] For simplicity's sake, however, we shall privilege one of those terms, namely "mode".

Modes can play the same theoretical roles of states of affairs, understood as exemplifications of universals by concrete particulars, and thus allow their supporters to dispense with states of affairs (See Orilia and Paolini Paoletti 2022: §1.6). We could speak here of a *theoretical correspondence* between states of affairs and modes, where the former are deployed in a state of affairs ontology, which accepts states of affairs and universals, and eschews modes, whereas the latter are deployed in a mode ontology, which accepts modes (and universals), and eschews states of affairs.

For present purposes, the crucial theoretical role is the truthmaker role.[7] Let us illustrate with an example how the correspondence works. Suppose, e.g., that

[3] See Paolini Paoletti 2016.
[4] See Maurin 2002, 2010, Wieland and Betti 2008 and Betti 2015.
[5] See Penner 2016.
[6] In his four-category ontology, Lowe takes *modes* to be particularized properties that rigidly depend for their identity and existence on their bearers, i.e., concrete individuals understood as independent substances. Moreover, Lowe sees modes as instantiating universals. In contrast, *tropes* are often seen as constituting concrete individuals as in a bundle theory. Furthermore, the supporters of tropes typically reject universals in favor of collections of mutually resembling tropes (see Lowe 2006: §6.7 on such issues). We here follow Lowe in assuming that particularized properties come together with universals that they instantiate, and we consider, as we shall see, whether or not certain relational universals exist. The supporter of tropes who does not accept universals should be able to translate such talk in terms of universals into talk in terms of mutually resembling tropes.
[7] On truthmakers, see Mulligan, Simons and Smith 1984 and MacBride 2022.

the concrete particular *a* yonder is rectangular, so that the proposition that *a* is rectangular is true. According to the state of affairs ontology, the truthmaker is the *monadic* state of affairs consisting of *a*'s being rectangular, which exists insofar as *a* exemplifies rectangularity. Rectangularity and *a*, by themselves, do not work as truthmakers, for they could exist without this proposition being true. This would be so, if *a* were differently shaped, and some other object were rectangular. According to the mode ontology, the truthmaker is (the existence of) a *monadic* mode *r* of *a*, which necessarily instantiates rectangularity, and necessarily is a mode of *a*, i.e., it is not possible that it exists without instantiating rectangularity, and without being a mode of *a*. By virtue of this, *r* works as truthmaker of the proposition in question, whereas *a* and rectangularity do not; they could exist and the proposition be false. Again, this would be so, if *a* were differently shaped, and some other object were rectangular.

Two similar stories could be put forward as regards relational propositions by *relationalist* supporters of either ontology. Suppose, e.g., that *a* and *b* touch each other, so that the relational proposition that *a* and *b* touch each other is true. According to the relationalist supporter of the state of affairs ontology, there is a *relational* universal, *touching*, exemplified by *a* and *b*, and thus a relational state of affairs that works as truthmaker of the proposition in question. According to the relationalist supporter of the mode ontology, the truthmaker is a relational mode of both *a* and *b*, which instantiates the relational universal *touching*.

Lowe's crusade against relations is shaped as an expulsion of relational universals and relational modes from a mode ontology. As we shall see, Lowe acknowledges relational truths, but denies that one needs relational universals and relational modes to provide truthmakers for them. He claims that monadic universals and modes would suffice for this task. Clearly, given the theoretical correspondence that we have just illustrated, an analogous approach could be deployed in an attempt to save relational truths, while rejecting relational universals and states of affairs in the context of a state of affairs ontology.

We could thus speak of an anti-relationalist strategy that could be deployed indifferently either against the relationalist supporter of the state of affairs ontology, or the relationalist supporter of the mode ontology. For conciseness, we shall analyze the strategy sometimes in terms of states of affairs and sometimes in terms of modes, but it should be clear that a translation from one perspective to the other is always possible. We shall argue, however, that the strategy does not succeed.

3. Internal vs. External Relations

As MacBride (2020: §1) preliminarily puts it, "a relation is internal if its holding between things is somehow fixed by the things themselves or how those things are; external relations are relations whose holding between things isn't fixed this way". More specifically, *R* is an *internal* relation if and only if *R*'s holding between *x* and *y* entirely ontologically depends on (i) *x*'s or *y*'s existence, or (ii) their intrinsic properties, or (iii) their essences. An *external* relation is one that is not internal.[8] The disjunctive character of the first definition (Paolini Paoletti 2021) is meant to capture in one fell swoop different conceptions of internality (see MacBride 2020:

[8] The ontological dependence is entire when there is no dependence on other items beside the dependees in question. In contrast, the ontological dependence is partial when there are other items in addition to the dependees in question.

§1, and references therein); this three-term disjunction is meant to be inclusive. Ontological dependence may be understood in different ways (Tahko and Lowe 2020). We shall assume that it at least involves the necessitation of the dependent entity by the dependee(s),[9] and indeed for most of the issues to be discussed it can be taken to amount to just that. In some cases, however, it is appropriate to see it as involving an ontological priority of the dependee(s) with respect to the dependent, or that the former is somehow more fundamental than the latter.[10]

Spatial relations are typically offered as paradigmatic examples of externality. For instance, if Tom and Sally are adjacent, their being so related does not appear to depend on their existence, essence, or intrinsic properties. Paradigmatic examples of internality are provided by identity, difference and proportional relations such as *being heavier than*. For example, the very existence of Tom necessitates that Tom is identical to Tom; the very existence of Tom and Sally necessitates that they are different; the possession by Tom and Sally, respectively, of the intrinsic properties (let us assume) *weighing 80 kg* and *weighing 70 kg* necessitate that Tom is heavier than Sally. In Lowe's ontology, the instantiation of universals by modes, and of kinds by concrete objects, may offer further examples of internality. For a mode instantiates necessarily the universal that it instantiates, and a concrete object instantiates necessarily the kind it instantiates. Hence, e.g., the very existence of the redness mode, *r*, of a red object, and of the universal *red* necessitates that *r* instantiates *red*. Similarly, the very existence of Tom and of the kind *man* necessitates that Tom instantiates *man*.

Lowe admits that there are true relational propositions such as that Tom is identical to Tom, or that Tom is heavier than Sally, i.e., as we may put it, propositions involving internal relations. However, he denies that there really are internal relations and relational states of affairs such as Tom's being identical to Tom or Tom's being heavier than Mary. He denies this, because there are non-relational entities that suffice as truthmakers of the propositions in question, e.g., Tom himself as regards the proposition that Tom is identical to Tom, and the two monadic states, Tom's weighing 80 kg, and Sally's weighing 70 kg, as regards the proposition that Tom is heavier than Sally.

However, that a true relational proposition is made true by non-relational entities is not enough to conclude that there isn't a relational state of affairs described by the proposition in question. That the non-relational entities in question suffice for the truth of the proposition may well suggest that they are more fundamental than the relational state of affairs, which thus depends for its existence on the non-relational entities. It is precisely for this reason that we take the relation that holds between the relata to be internal. Nonetheless, this does *not* make it a non-entity. That very internal relation is precisely what we mean by the relational predicate that we use in expressing the true relational proposition in question, and the point remains that the relation *holds* between the relata. Granted, it holds by virtue of the existence of the non-relational entities, but it holds nevertheless, which is to say that there is a state of affairs consisting of the exemplification of a relation by the individuals at issue, Tom and Sally in our case. To say otherwise

[9] Thus, for example, if the relata *x* and *y* exist, then, necessarily *R* holds between *x* and *y*.
[10] On the ontological priority of relata over the holding of internal relations between them and similar ideas (often expressed in terms of 'in virtue of' or 'grounding' terminology), see for example Campbell 1990: 97-113, Vallicella 2002, Meinertsen 2011, Clementz 2014, Keinänen, Keskinen, Hakkarainen 2019, and Ioannidis, Psillos, Pechlivanidi 2022.

is to embark in something like Armstrong's dubious doctrine of an *ontological free lunch*, according to which supervenient entities are "no addition of being" (Armstrong 1997), which Lowe himself (2011) has criticized: "I wish to voice some concern about his notion of the 'ontological free lunch'. A free lunch is a *lunch*, and so something rather than nothing. But 'no addition of being' sounds very much like *nothing* to me".

Thus, an internally relational state of affairs is an entity in its own right, despite its being a dependent entity. To shed further light on this, we can point out that *it*, rather than its non-relational grounds, may well work as a cause in an episode of causation. We can see this, by appealing to Yablo's (1992) proportionality constraint on causation, which we take to be quite plausible. Following Yablo, when two states of affairs happen to compete for the role of cause of a certain state of affairs, *e*, it may well be that one among them is *more proportional* to *e* than the other one; in this case, the more proportional one is the cause of *e*.

In order to establish which candidate cause is more proportional, there are two conditions to be considered for a given candidate cause, *c*, and a corresponding effect *e*. These conditions presuppose that states of affairs can be ordered as more or less *specific*, on the basis of the higher or lower specificity of properties whose exemplification makes it the case that there are the states of affairs in question. For example, *scarlet* is a property more specific than *red*, and accordingly the state of affairs consisting of the exemplification of *scarlet* by a given object is more specific than the state of affairs consisting of the exemplification of *red* by the scarlet object in question. Similarly, *guzzling* is more specific than *drinking*, and accordingly the state of affairs of someone's guzzling is more specific than the state of affairs consisting of the exemplification of *drinking* by the guzzler in question.[11]

It is then possible to define two constraints on causation:

(R) *c* is required for *e*, i.e., for any state of affairs, *c*-, less specific than *c*, if *c*- had occurred without *c*, then *e* would not have occurred;

(E) *c* is enough for *e*, i.e., for any state of affairs, *c*+, more specific than *c*, *c*+ was not required for *e*.

The idea is that, given two competing candidate causes, in particular two candidate causes such that one can be considered more specific than the other, the winner is the one that meets these two constraints. To illustrate with an example adapted from Yablo, suppose that Socrates drank the hemlock in a guzzling way, so that there are these two candidate causes for Socrates's death: Socrates' drinking the hemlock and the more specific Socrates' drinking the hemlock in a guzzling way. Then, the former wins the competition, since it is required for the death, and enough for it, whereas the latter is not required. On the other hand, the latter wins the competition for the role of causing the noise accompanying the guzzling, since it is required for the noise, and enough for it, whereas neither can be said of Socrates' simply drinking the hemlock.

Suppose now that Tom and Sally sit on the two bowls of a big weighing scale, say, Tom on the left bowl, and Sally on the right bowl. Since Tom is heavier than Sally, the result is a state of affairs, *e*, consisting of the going down of the left bowl

[11] See Yablo 1992 for a more detailed account of the notions involved in the proportionality constraint. Yablo considers four conditions, rather than simply two, and speaks in terms of events, rather than in terms of states of affairs. These differences with what we have done here are not important for present purposes.

with Tom and the going up of the right bowl with Sally. We may consider two candidate causes for this state of affairs, namely the state of affairs of Tom's being heavier than Sally and the more specific compound state of affairs consisting of Tom's weighing 80 Kg and of Sally's weighing 70 kg. The latter can be seen as more specific than the former, inasmuch as *weighing 80 kg and weighing 70 kg* can in turn be seen as more specific than *being heavier*, as it is one way in which two objects can be such that one is heavier than another, alongside with many others, such as *weighing 79 kg and weighing 72 kg*. Thus, Tom's being heavier than Sally wins the competition with Tom's weighing 80 Kg and Sally's weighing 70 kg: the former is required for the effect and enough for it, whereas the latter is not required; if Tom had weighed 79 kg and Sally 72 kg, there would still have been the effect *e*. Thus, it seems a relational state of affairs involving an internal relation may well be a cause.

4. Intentional Relations

Intentional relations are mental relations through which a thinking subject is involved in an 'object-oriented' mental activity, as she seems to be somehow connected to something else, often called *intentional object*. For instance, John may see a cake and desire it, hear an angry dog and fear it, love his new girlfriend and hate her previous one. Seeing, hearing, desiring, fearing, loving, hating, are all intentional relations, and, assuming these examples involving John, there are relational states of affairs involving such relations, John, and different intentional objects, namely the cake, the angry dog, the new girlfriend and the old one. Presumably (and following Lowe, as we shall see), such relations presuppose a most basic intentional relation: John *thinks about* the cake, the angry dog, etc. Moreover, these relations, *thinking about* in particular, appear to be external. Lowe (2016: §9) however argues against this view. Let us see how.

Lowe focuses on *loving* and *thinking about* and argues that, despite appearances, they are not really relations after all, but monadic modes of a special sort, in that they involve an intentional object. The idea seems to be that relational modes require existing relata, but the intentional object may be non-existent, and thus the alleged relations in question must in fact be monadic. Thus, for example, the true proposition that John loves Mary is made true, according to Lowe, by a non-relational mode of John, which somehow involves Mary as an intentional object. Despite this involvement of an intentional object, the mode is monadic, because, in principle, Mary, *qua* intentional object, might not exist, and yet John could still love her. Lowe makes this point as follows:

> Here it may be asked: but does not Mary, too, have to exist in order for this proposition to be true, at least in order for Mary to be the intentional object of John's loving trope? I think that the correct answer to this is 'No'. John could love Mary even if Mary did not exist and had never existed. Plausibly, he couldn't love Mary without being able to think about Mary, but in order to do that he need only be able to grasp Mary's essence—he needs to know or understand what it is or would be for something to be Mary. After all, we have acknowledged that mermaids do not exist, but John could certainly be infatuated with a certain mermaid, Miranda. He could love Miranda (Lowe 2016: 106).

There are many contentious assumptions in this passage, including these: that there are individual essences, and that in order to think about an object we

need to grasp its essence; moreover, at least if we take it literally, at face value, that there are non-existent objects, which we can think about, and even love, provided we grasp their essences. A different, less Meinongian and more Russellian, picture could be provided, however (or, if you wish, a different interpretation of what Lowe is saying here). Perhaps, there are individual essences, we may leave this open, but perhaps we need not grasp them to think about objects, or to seemingly think about objects. May be, all we need is to appropriately deploy descriptive contents, *the so and so*, or *the such and such*, where *so and so* and *such and such* are garden-variety properties, not individual essences; so that, when these properties are univocally exemplified, we do think about objects. Otherwise, we do not really, even though it may seem so, and our mental activity may still be termed 'object-oriented' precisely because we are deploying descriptive contents. Thus, for example, John may now recall some visual appearance *A*, which he had experienced and interpreted as a mermaid that he baptizes *Miranda*, and thus he now thinks about the *A*-looking mermaid Miranda. In fact, there is no object with the property *A-looking mermaid Miranda*, thus really there is no intentional object. In contrast, when John thinks about Mary, he thinks of her via descriptive contents, say *the B-looking woman* (where *B* is a certain visual appearance), or *the cello-player at yesterday's concert*, which happen to correspond to an object, namely Mary, in that she uniquely exemplifies the relevant properties, *B-looking woman*, or *cello-player at yesterday's concert*.[12] Lowe may say instead that John grasps a certain Miranda individual essence, which is the essence of a non-existent object, or that John grasps a certain Mary individual essence, which is the essence of an existent object.

Whatever the correct story, one could insist that there is always an irreducibly relational aspect in the mental activities of the relevant thinking subject. After all John deploys descriptive contents in one picture and grasps individual essences in another. Let us say, he *thinks* descriptive contents or he *thinks* individual essences, and this *thinking* is a relation, involving as relata John and descriptive contents, or individual essences. And indeed it is an external relation: the existence of the relata or their intrinsic properties do not necessitate that the relevant relational modes come to exist. Moreover, when the descriptive content, or individual essence, corresponds to an object, there is at least in this case an intentional object to which the thinking subject is then related by *thinking about* and possibly other intentional relations.

Lowe ignores these considerations, and he is willing to reconsider the issue only in the light of the objection that something can be an intentional object for a thinking subject only if there is a 'real relation' involving the subject and the object. He concedes that, if this is the case, causation is the only thing that could fill the bill:

> But what if it is objected that Mary can only be the intentional object of one of John's mental states if there is some real relation between John and Mary? […] what sort of 'real relation' might be insisted upon here? Presumably, a causal one, since it is hard to see what else could be required (Lowe 2016: 106).

He dismisses the objection, however, because, as we shall see in the next section, he does not take causation to be relational. We shall argue against this in

[12] See Orilia 2010 for an approach of this sort.

the following, but, before going to that, it should be noted that it does not seem correct to say that only causation can account for an intentional object's being related to a thinking subject. In the Russellian picture sketched above, for example, all that is required is that the relevant descriptive content, say *the so-and-so*, corresponds to an object, and this may be the case, even if there has been no causal interaction between the thinking subject and the object. All that is required is that the property *so-and-so* is uniquely exemplified by the object.

5. Causal Relations

Lowe takes for granted a powers account of causation and argues on this basis that causation is not an external relation. There are however many other rival views about causation, and those who buy such alternatives and take causation to be an external relation presumably will not find in Lowe's argument any reason to change their mind. Consider for example a process view of causation, according to which causation amounts to the transfer of a physical quantity from the cause to the effect (Dowe 2000); or a primitivist view, according to which causation is a primitive relation that cannot be analyzed in more basic terms. On both such views, causation appears to be an external relation and Lowe's arguments regarding the powers account will do little to dispel this. We shall see however that, even if we meet Lowe in his favorite terrain and concede a powers account, it does not follow that causation is not external.

Lowe (2016) argues that external causal relations may be dispensed with, if one accepts a powers view of causation. Take a causal process such as the water's dissolving the salt. Such a process is due to the activation of the causal power possessed by the water to dissolve the salt—and possibly also by the activation of the causal power possessed by the salt to be dissolved by the water. Now consider the former power. It has a certain manifestation, i.e., on Lowe's account, the salt's dissolving. This manifestation essentially and necessarily depends—for its existence—on the water's power to dissolve the salt. Here we have a relation of existential dependence. Yet, according to Lowe, this is an internal relation: *this* particular manifestation could not exist, in the absence of *this* particular power, although the power could exist without any (existent) manifestation of it. More precisely, it is part of the essence of the manifestation at stake (i.e., the salt's dissolving on account of water) that such a manifestation is the activation of the water's power to dissolve the salt. Thus, the former manifestation existentially depends on the latter power. However, the existential dependence relation between the manifestation and the power entirely depends in turn on the essence of the manifestation. Therefore, it is an internal relation and it is also ontologically posterior to its relata (or, equivalently, less fundamental than the latter).

In reply, one could point out that—at least *prima facie*—powers themselves seem to be endowed with a relational essence, i.e., an essence that includes at least one relation (call it an "essential relation").[13] Consider the water's power to dissolve the salt. Such a power may essentially consist in a certain relation (i.e., *possibly dissolving*) holding between the water and the salt. Or it may essentially consist in one further relation (i.e., *possibly causing*) holding between the water and the salt's dissolving. Or it may essentially consist in two states of the power itself

[13] Intuitively, whenever one tries to define the essence of a power, one must invoke at least one relation.

(i.e., a non-activated state and an activated one) that are linked by a certain relation (i.e., *turning into*).[14] Or this power may essentially be such that, in order to be activated, it must be related to a certain manifestation partner.[15]

It is true that the essential relation to be included in the essence of powers may well be necessitated by the very existence of powers: necessarily, whenever powers exist (obviously together with their essence), it is also the case that the essential relation holds between its relata. And it is true that a relational view of powers is not easy to swallow.[16] However, and crucially, the essential relation at stake (e.g., the *possibly causing* relation holding between the water and the salt's dissolving) would *not* be ontologically posterior to powers. On the contrary, being included in the essence of powers, it would at least be ontologically on a par with the latter. Thus, it would *not* be legitimate to dispense with such a relation by appealing to powers. And those who wish to dispense with causal relations by appealing to powers must show one thing: that powers do *not* include relations in their essence.[17]

For example, recall the view that powers essentially consist of two states, i.e., a non-activated and an activated one, linked by a certain relation (i.e., *turning into*). The latter seems to be an essential relation included in the essence of the power. One may reply that such a relation is actually included in the essence of the non-activated state: the latter essentially turns into the corresponding activated state. However, the problem is just postponed. For the non-activated state would include in its essence an essential relation, i.e., that of *turning into* a certain activated state. And such an essential relation would *not* be ontologically posterior to the non-activated state.

In sum, one cannot dispense with external relations just by accepting a powers view of causation.[18] Additionally, one needs to show that powers are not endowed with relational essences.

6. Temporal Relations

Prima facie, there are external temporal relations such as *earlier* or *simultaneous*. Lowe's argument against this is two-fold (2016: 108-109). He considers two options in temporal ontology, namely presentism, the one he sympathizes with, and its denial, and then claims that on both options temporal relations should be dismissed. Given presentism, this is because this view cannot admit cross-temporal relations, since it is committed only to the present time. One might think that we would however be left with intra-temporal relations such as simultaneity, but Lowe urges that there is no such relation, since, at least given presentism, it amounts to co-existence, which is no relation, since existence is not a property. Given no presentism, this is because one should end up with the Minkowski four-dimensional space-time familiar from relativity theory, and then, claims Lowe,

[14] See for example Marmodoro 2017 and Psillos 2021.
[15] See Heil 2003 and Martin 2007.
[16] See for example Molnar 2003.
[17] Thus, *contra* Ott (2021), essential relations cannot be considered internal. See also Yates 2016.
[18] In a similar vein, *contra* Heil (2016), it can be argued that powers with reciprocal manifestation partners are endowed with essential relations (e.g., reciprocally manifesting *together with*). Thus, such relations cannot be taken as ontologically posterior to powers.

one could adapt to such a framework the arguments he puts forward against the existence of spatial relations in three-dimensional space (see next section).

Now, this is certainly too quick, because there are many temporal ontologies on offer in the no-presentist camp, and it is far from obvious that they are all committed to Minkowski space-time. As a matter of fact, only with the B-theory, typically associated to relativity theory, this commitment seems clear. However, with no-presentist A-theories such as the moving spotlight or the growing block views, in which there is an objective present, the Minkowski space-time of relativity theory, which has no room for an objective present, hardly fills the bill. Nevertheless, Lowe takes these non-relativistic options as much less plausible alternatives to presentism than the relativistic view and accordingly disregards them. Be this as it may, we shall see in the next section that the arguments against spatial relations should be resisted, and thus we should have no temptation to adapt them to Minkowski four-dimensional space in order to expel external temporal relations from it.

Let us then consider whether presentism really leads to the denial of temporal relations. We shall see that it at least involves internal temporal relations. Note first that simultaneity cannot be dismissed as non-relational, even if it amounts to co-existence. For even if it were granted that existence is no property, co-existence is not mere existence, it is in fact *co*-existence, the being part of one single world of all the existents. At the very least, we have an internal relation here. More importantly, temporal relations enter the picture once the following is taken into account. Unless one accepts the extreme view that there are no true propositions about the past and the future (Dawson 2021), presentism, as is well-known, must deal with the truthmaking problem: given that there are such propositions, what in the present makes them true? More generally, presentism must also account for the fact that by using dates, we seem to make true statements about the temporal ordering of times and events. Let us focus on these issues.

We can truly say, for example, (i) that Socrates drank the hemlock, (ii) that Caesar crossed the Rubicon, (iii) that the former fact is earlier than the latter, (iv) that there will a total solar eclipse on April 8, 2024, in Mazatlán, Mexico, at 10:51 a.m. local time, (v) that April 8, 2024, 10:51 a.m. Mazatlán, Mexico time is later than April 23, 2020, 10:53 a.m. Mazatlán, Mexico time. Presentism must be able to acknowledge simple truths such as these in a way compatible with its commitment to only present entities. There may be different ways of doing this, but, in any case, it can hardly be done without admitting in the end cross-temporal relations, even though the entities involved in these relations may just be propositions. Let us focus on dates, such as "April 8, 2024, 10:51 a.m. Mazatlán, Mexico time" and "April 23, 2020, 10:53 a.m. Mazatlán, Mexico time", to make this clear. They seem to require referents, which in turn appear to bring forth a commitment to different times appropriately ordered in a time axis. To make this compatible with presentism, such times are usually taken to be Priorean world propositions (roughly, gigantic maximal and consistent propositions that were true, are true or will be true), although it has also been argued that the presentist can view them as *sui generis* entities as in a substantivalist view of time (see Orilia 2021). Whatever the choice, the propositions that there will be a total solar eclipse on April 8, 2024, 10:51 a.m. Mazatlán, Mexico time, and that this time is later than April 23, 2020, 10:53 a.m. Mazatlán, Mexico time must turn out to be true.

Let us focus on the propositionalist view of times to see how cross-temporal relations come to the fore. If times are taken to be world propositions, the two

dates stand for two distinct propositions W2 and W1, respectively, and to say that there will be a total solar eclipse on April 8, 2024, 10:51 a.m. Mazatlán, Mexico time is to say that W2 will be true and it entails E, where E is the proposition that there is a total solar eclipse. In symbols, **F**W2 & (W2 ⇒ E). Thus, it is asserted that two propositions are related by a relation conveyable, with propositional variables *p* and *q*, as follows: **F***p* & (*p* ⇒ *q*). This relation involves an entailment relation between two propositions, which can certainly be seen as an internal relation, and the relation overall may presumably be taken to be internal. Moreover, the fact that W1 is earlier than W2 amounts to this disjunction: it was true that W1 and that W2 will be true, or it is true that W1 and that W2 will be true, or it will be true that W1 is true and that W2 will be true. In symbols, this is **P**(W1 & **F**W2) ∨ (W1 & **F**W2) ∨ **F**(W1 & **F**W2). Again, we are saying that the two propositions W1 and W2 are related by a certain relation, **P**(*p* & **F***q*) ∨ (*p* & **F***q*) ∨ **F**(*p* & **F***q*). In this case perhaps the relation is external.

7. Spatial Relations

Spatial relations are relations such as *occupying* (a certain place), *being 3 meters apart from* (something), and so on. Spatial relations are taken as paradigmatically external. For they seem *not* to entirely depend on the existence, nor on the essence, nor on the intrinsic properties of regions of space and/or their occupants (see Paolini Paoletti 2021). However, Heil (2012) and Lowe (2016) argue for the opposite view. Heil (2012) hypothesizes that space is the only existing substance. On this view, whenever Tom occupies position *p*, what actually happens is that a certain P-portion of space (i.e., a certain portion of space with features P) is Tommish. In a similar vein, Lowe (2016) assumes that regions of space entertain internal relations with one another. Whenever Tom occupies position *p*, what happens is that the outer surface of Tom constitutes (i.e., produces) the boundary of the P-region of space. And, whenever Tom moves from region *r* to region *r**, there is nothing but a successive Tom-shaped densifying of a continuous series of spatial regions *r*-(...)-*r**.

We shall set aside Lowe's analysis of Tom's occupying *p*, because it appeals to causal/productive relations, which are *not* uncontroversially reducible (as we saw in §5). Let us focus on Heil's account and on Lowe's proposal concerning Tom-shaped 'densifyings' of spatial regions. On both views, Tom seemingly turns out to be a property of regions of space, say *being Tommish*. What kind of property is it?[19]

It cannot be an Aristotelian universal. For Aristotelian universals may be instantiated by multiple and disjoint regions of space at one and the same time. And this cannot happen with *being Tommish*, if Tom is an ordinary object that cannot exist at multiple and disjoint regions at one and the same time.

Being Tommish cannot be a purely qualitative property, be it universal or particular. Assume (by way of *reductio*) that properties such as *being Tommish* are purely qualitative. One may surmise that there is an ordinary object qualitatively indiscernible yet numerically distinct from Tom. Call such an object "Tim". Tom and Tim cannot occupy the same region of space. Moreover, corresponding to

[19] The analysis below expands on an argument presented in Paolini Paoletti 2021, especially with respect to the possibility that *being Tommish* is a trope or a mode.

Tim, there should exist a purely qualitative property: *being Timmish*. This is qualitatively identical with *being Tommish*. If both *being Timmish* and *being Tommish* are purely qualitative, this implies that the former is identical with the latter. As a result, whenever *being Timmish* gets instantiated by a certain region of space, *being Tommish* gets instantiated by that region, and vice versa. Thus, Tom and Tim actually turn out to occupy the same region of space, *contra hypothesis* (i.e., that Tom and Tim cannot occupy the same region of space).

Being Tommish cannot be a haecceity, i.e., an individuating property, be it a haecceity of regions of space or a second-level haecceity of first-level properties had by regions of space. In both cases, regions of space or first-level properties of regions of space would turn out to depend for their individuation on *being Tommish* and they could not exist without the latter. Both consequences are highly unpalatable.

Being Tommish cannot be a particularized property. If it is, there are two options: either it does not depend on its 'bearer' for its existence, and we call it "*trope*" in this case, or it does, and we call it "*mode*". If it is a trope, *being Tommish* and the regions of space that seem to be occupied by Tom would still need to entertain external relations in order to account for the fact that Tom seemingly occupies those regions. Suppose then that it is a mode. More precisely, there may be multiple modes at stake, such as *region r's being Tommish*, *region r*'s being Tommish*, and so on. Such modes resemble each other because they are all *being Tommish*-modes. This may be the reason why they seem to be associated with one and the same ordinary object, i.e., Tom. So far, so good. However, *being Tommish*-modes have a number of features that are *not* had by other kinds of modes. They are *sui generis* modes and their 'extravagant' features—in comparison with the features of other modes—seem not to be adequately explained. Thus, the introduction of *being Tommish*-modes looks like an *ad hoc* move.

Indeed, compare *being Tommish*-modes with *being happy*-modes. Whenever multiple ordinary objects seem to be happy, one may find multiple *being happy*-modes involving distinct and disjoint regions of space at one and the same time—or distinct spatiotemporal regions that nevertheless include one and the same time. This *cannot* happen with *being Tommish*-modes. Moreover, the presence of distinct *being happy*-modes does *not* seem to guarantee by itself that they are associated with *only one* object that is happy in multiple regions. Such modes may be associated with distinct happy objects in distinct regions. On the contrary, the presence of distinct *being Tommish*-modes does guarantee that they are associated with only one object (i.e., Tom) that is happy in multiple regions. Thus, why do *being Tommish*-modes behave in such peculiar ways, when compared with *being happy*-modes? One cannot claim that the former inherits their 'extravagant' behavior from the features of ordinary objects such as Tom, whereas the latter do not. For ordinary objects such as Tom must actually reduce to modes such as *being Tommish*-modes. In sum, there is an explanatory gap here.

In order to dispense with irreducible spatio-temporal relations, Simons (2016) suggests that we should invoke processes and internal relations between regions of space-time. Assume that Napoleon is near Bismarck, so that an external *being near* relation seems to hold between Napoleon and Bismarck. What makes it true that Napoleon is near Bismarck is supposed to be the following: Napoleon's life (i.e., a certain process) has a certain stage that essentially occupies a certain region *r*, Bismarck's life (i.e., another process) has a certain stage that essentially

occupies a certain region *r**, *r* essentially is near *r** and life-stages within each life are genidentical with one another.[20]

We concede that vicinity relations between regions of space may actually entirely depend on their essences, so that such relations may well turn out to be internal. On the contrary, it is not clear if the occupation relations between regions of space and life-stages entirely depend on the essences of the latter or if they are actually *included* in the essences of the latter. In the latter case, such relations are *not* ontologically posterior to regions of space and life-stages, so that they cannot be dispensed with. But we concede the former case for the sake of discussion.

Be that as it may, Simons also accepts that, in addition to Napoleon's actual life and Napoleon's life-stages, there is an ordinary object such as Napoleon. It is true that Napoleon contingently depends on his actual life. However, it is also true that Napoleon himself could have lived another life. Thus, there is a *contingent* dependence relation between Napoleon and his actual life.

Consider now the relation R between Napoleon and his actual life.[21] That R holds between Napoleon and his actual life does *not* entirely depend on Napoleon's essence. For Napoleon could have lived another life. Maybe—if we assume that Napoleon's actual life could not have been the life of anyone else—it entirely depends on the essence of Napoleon's *actual* life. How could this be the case? There are two options.

First option: R is a necessary and brute tie between Napoleon's actual life and Napoleon himself. Such a tie is essential to Napoleon's actual life. However, such a tie now seems to be an essential and irreducible relation. For it is included in the essence of Napoleon's actual life. Thus, R is not ontologically posterior to its relata and it cannot be dispensed with.

Second option: we may surmise that Napoleon's actual life *rigidly* depends on Napoleon (and this is what R amounts to), whereas Napoleon *non-rigidly* depends on Napoleon's actual life. Napoleon's actual life *rigidly* depends on Napoleon insofar as it depends on that specific entity, i.e., Napoleon, that cannot be replaced by any other entity. Napoleon *non-rigidly* depends on Napoleon's actual life insofar as the former depends on some life or another (provided it is a life of Napoleon) and it happens that Napoleon depends on his actual life (as it is). Now, the former dependence relation is stronger than the latter. Indeed, the rigid dependence tie between Napoleon's actual life and Napoleon is stronger than the non-rigid dependence tie between Napoleon and Napoleon's actual life. The former requires one specific entity (i.e., Napoleon). The latter requires one entity or another of a certain sort (i.e., one life or another of Napoleon). Thus, *ceteris paribus*, the degree of dependence of Napoleon's actual life on Napoleon is higher than the degree of dependence of Napoleon on Napoleon's actual life. Thus, *ceteris paribus*, Napoleon is somehow more fundamental than his actual life. If this is the case, why then does a fact about Napoleon's position turn out to depend on a fact about his actual life, i.e., on a fact about something less fundamental than Napoleon himself?

On the other hand, if one were to get rid of Napoleon and only admitted life-stages and life-processes, it would turn out to be difficult to justify the genidentity

[20] The stages of a process are genidentical insofar as they are distinct but they partake in the same process.

[21] This argument expands on an argument presented in Paolini Paoletti 2021.

between distinct life-stages within one and the same life-process. Indeed, with Napoleon in place, such a genidentity is grounded on the similarity between the life-stages at stake, i.e., on an internal relation between them. In a nutshell, the life-stages at stake are genidentical with one another (so that they partake in the same life-process), because they ultimately resemble one another for being life-stages *of Napoleon*. In this case, genidentity would be an internal relation. However, without Napoleon, one cannot adopt this strategy. Thus, one should either appeal to further, non-relational entities (e.g., qualitative properties of life-stages), or make genidentity an external relation. As regards the first option, the additional non-relational entities may *not* be enough to ground genidentity: what about the possibility of qualitatively indiscernible life-stages that nevertheless belong to distinct life-processes? As regards the second option, making genidentity an external relation would not be appealing to anti-externalists.

One possibility remains: that the relation R between Napoleon and Napoleon's actual life entirely depends on the intrinsic properties of its relata. Yet, we can easily see that this is not the case. No intrinsic property of Napoleon and/or of his actual life seems to be enough in order to necessitate that R holds between Napoleon (and no one else) and Napoleon's actual life (and no other life). Thus, the conclusion is that R turns out to be an external relation, *contra* Simons' *desideratum*.

8. The Location Problem for Relational Modes

We shall now cope with the location problem for relational modes, for the reasons presented in Section 1.

Consider the following monadic mode: *Romeo's being happy*. It is easy to determine its location. This mode is wherever Romeo is. In contrast, consider a relational mode such as *Romeo's loving Juliet*. We may assume that it rigidly depends—for its identity and continued existence—on both Romeo and Juliet. It seems that such a mode must have a location. But it is not obvious where it is. *Romeo's loving Juliet* cannot entirely be in only one relatum (e.g., in Romeo). For it is a dyadic relational mode and it irreducibly involves two distinct relata. It cannot entirely be in both relata, i.e., it cannot entirely be in Romeo and also (entirely) in Juliet. For if it were entirely in Romeo, there would be no 'part' of that mode that could also be in Juliet—who occupies another place.

Moreover, *Romeo's loving Juliet* cannot entirely be in both Romeo and Juliet *taken together*. For the pair composed of Romeo and Juliet would then turn out to be a new entity, but it would not be a substance. And substances seem to be the only legitimate bearers of modes.

Obviously enough, *Romeo's loving Juliet* cannot entirely be in the region of space between Romeo and Juliet. For it involves Romeo and Juliet and then it has nothing to do with this region. *Romeo's loving Juliet* cannot be *in part* in one relatum (i.e., in Romeo) and *in part* in the other relatum (i.e., in Juliet). For modes—being particulars—cannot have divided location. Finally, *Romeo's loving Juliet* is not composed of its relata. Indeed, the proper relationship entertained by that mode with its relata is one of dependence.

In sum, since relational modes must have a location, but it seems that they cannot have one, they cannot exist. This is the location problem for relational modes.[22]

There are different ways to reply to this argument. First of all, modes inhere in their 'bearers'. Inherence is here interpreted in terms of rigid dependence (for identity and continued existence). However, it is not clear how inherence is connected with location. And it is not clear if inherence needs to imply that accidents are where their 'bearers' are.[23]

Moreover, we could actually grant that *Romeo's loving Juliet* is entirely in Romeo and that it is also entirely in Juliet. For relational modes may behave—when it comes to their location—just like Aristotelian universals. Namely, relational modes may entirely be at distinct and disjoint places at one and the same time. In this case, relational modes need not have spatial parts as ordinary objects do. Indeed, what would such parts be like? Alternatively, we could actually grant that *Romeo's loving Juliet* is in part in Romeo and in part in Juliet. For relational modes may allow for divided locations.

In reply, it can be pointed out that there is one apparent advantage if one only accepts monadic modes. Monadic modes are where their 'bearers' are and they behave just like their 'bearers' when it comes to their location. For example, monadic modes cannot entirely be at distinct and disjoint places at one and the same time, they cannot have divided location, and so on. On the contrary, with relational modes and their location, one should allow for some sort of 'special' behavior.

Nevertheless, one may wonder whether it is really an advantage to grant that monadic modes are where their 'bearers' are and that they behave in the same ways as their 'bearers' do. Further problems may actually arise for this view. For example, are monadic modes parts of their 'bearers'? If they are, how can their 'bearers' be *entirely* characterized by them? For instance, how can Romeo as a whole be happy?[24] Do monadic modes *entirely* coincide with their 'bearers'? If so,

[22] The location problem, which Lowe 2016 only briefly addresses, is a classical problem. It was discussed, among others, by Peter Auriol, Suárez and Leibniz. For a more recent discussion, see Heil 2012. For an overview, see Penner 2016.

[23] See Penner 2016.

[24] One reviewer pointed out that, actually, every whole is entirely characterized by each of its parts. For example, Romeo is entirely characterized by his heart, which is a proper part of him. But there is a subtle distinction to be made here. It is inappropriate to claim that Romeo is (entirely) *characterized* by his heart. For Romeo's heart is not a property of Romeo. At best, it is meaningful but false to claim that Romeo is (entirely) composed of his heart or (entirely) identical with his heart. At best, Romeo is entirely characterized by *Romeo's having a heart*, which is a relational mode. At any rate, the connection between characterization and parthood is far from being clear. One obvious suggestion is that, if Romeo is characterized by P, then P is a proper part of Romeo. Yet, this idea is not troublesome for relational modes. For *Romeo's loving Juliet* may be a proper part of both Romeo and Juliet either by being made up of two proper parts (i.e., the proper part in Romeo and that in Juliet) or by entirely overlapping both Romeo and Juliet (i.e., Romeo and Juliet would entirely overlap as concerns Romeo's loving Juliet, though not overlapping in physical space). One stronger suggestion is that, if Romeo is characterized by P, then P is a proper part of Romeo *and only of him* (or only of him and of his proper parts). But why should one accept this principle if one also believes in relational modes? Indeed, it seems that the only plausible motivation for accepting this principle is that no mode can characterize more

and if coincidence is a transitive relation, then all the monadic modes of a 'bearer' turn out to coincide with one another (e.g., *Romeo's being happy* coincides with *Romeo's being a male* and with *Romeo's being unemployed*). However, it is controversial that there may be coincident entities of one and the same kind (e.g., coincident modes). Can monadic modes—if they are in space just like their 'bearers'—have spatial parts (as their 'bearers' do)? If so, what do such parts look like? Namely, what does a spatial part of *Romeo's being happy* look like?

We do *not* claim that these are insurmountable problems. But we think that the presence of these problems shows that it is *not* an advantage as such that (monadic) modes are where their 'bearers' are and that they behave in the same ways as their 'bearers' do.[25]

9. Conclusion

In contrast with the anti-relationalist trend well represented by Lowe 2016, internal relations should be acknowledged in our ontological inventory and relational states of affairs, or modes, involving internal relations should also be granted. Moreover, those relations that are traditionally taken to be external had better continue to be regarded as such, so that there is still room for relational states of affairs, or modes, involving external relations. In a nutshell, relations are irreducible.[26]

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than one entity—or more than one entity and its proper parts. But this motivation begs the question against those who accept the existence of relational modes.

[25] There are at least three further problems for relational modes: the numbering problem (the number of modes depends on the number of their 'bearers', so that multiple 'bearers' imply multiple modes, and not just one relational mode), the abstraction problem (modes must be abstracted from their 'bearers' in order to be known, but the 'bearers' of relational modes are pairs of substances and it is only possible to abstract from single substances), the double role problem (relational modes are required to relate and to qualify their 'bearers', but they cannot play both roles). We shall not discuss such problems here, because it seems to us that they rest on contentious assumptions that can easily be questioned. For example, why cannot relational modes both qualify and relate their 'bearers'? Why cannot one claim that their qualifying their 'bearers' actually is identical with or is grounded upon their relating their 'bearers'? See Lowe 2016, Penner 2016 and Marmodoro 2022.

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