Kant on Relational Properties and Real Changes

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Abstract: In the *Critique of Pure Reason*, Kant often remarks that phenomena consist only in relations. This is a highly puzzling thesis that is not easily reconcilable with the explanation of natural processes. More specifically, it is not clear whether and how a network of mere relations (such as 'being higher than', 'being next to', etc.) can give rise to genuine changes in nature. I call this the problem of global relationality. In this paper, I suggest a solution to this problem by showing that Kant's specific sense of relationality is ultimately grounded in the spatiality of phenomena and differs from the one usually assumed in the contemporary debate. I argue that a subset of empirical properties can be regarded as 'comparatively intrinsic' since they preserve a genuine sense of intrinsicness while being fully relational in space. As a result, real changes can take place in the phenomenal realm if they concern comparatively intrinsic properties of empirical objects.

1. Introduction

In the *Critique of Pure Reason*, Kant often remarks that phenomena do not possess 'inner' or 'internal' determinations. Kant, for example, writes:

> The inner determinations of a *substantia phaenomenon* in space … are nothing but relations, and it is itself entirely a sum total of mere relations. (A265/B321)

> A persistent appearance in space (impenetrable extension) contains mere relations and nothing absolutely internal. (A284/B340)

According to these passages, phenomena are or consist only in relations. Let us call this *phenomenal relationality* (PR). PR is a highly puzzling thesis. If phenomena consist only in relations, it follows that the relata of any phenomenal relation are not independent things, but rather relations in turn. Second, if all phenomena are relations, their 'properties' or 'determinations' must also be relational (since a non-relational property that consist only in relations implies a contradiction; see also Watkins 2005: 350). The world of phenomena is therefore portrayed by Kant as a complex network of relations that is not reducible to non-relational properties of things.

Kant is aware of the puzzlement that PR may give rise to. He, for example, claims:

> It is certainly startling to hear that a thing should consist entirely of relations, but such a thing is also mere appearance, and cannot be thought at all through pure categories; it itself consists in the mere relation of something in general to the senses. (A285/B341)

His answer to the puzzlement of PR is transcendental idealism, namely the doctrine that phenomena are nothing but appearances. Given transcendental idealism, we should not expect that phenomena meet the same ontological 'standards', as it were, of things in themselves. An object of experience is the result of the relation of 'something in general to the senses' and, as such, cannot be but ultimately relational.

While transcendental idealism may curb our expectations concerning phenomena, it still leaves many questions unanswered. Notoriously, the transcendental idealist, for Kant, is also an empirical realist with respect to phenomena (e.g., A370–1). A minimal desideratum of empirical realism, as I take it, is the capacity to explain how phenomena, despite being

dependent on the subject, are 'real'. There are, however, reasons to doubt that PR is compatible with the empirical reality of natural processes. More specifically, it is not an easy task to understand whether and how a network of relations can give rise to real changes. As it has been noted, typical relational properties such as 'being higher than', 'being next to', etc. do not seem to have the 'oomph' to trigger causal processes (e.g. Chignell & Pereboom 2010). In fact, many contemporary philosophers assume that only intrinsic properties of things are apt to be efficacious (e.g. Shoemaker 1980; Heil 2005).

In this paper, I wish to suggest that Kant's phenomena, while consisting in a network of relations, can be efficacious. In the next section, I will elaborate on why intrinsic properties seem to be needed to explain real changes. In section 3, will define more precisely some key concepts used in the debate. I will then identify Kant's spatial sense of relationality (section 4) and argue that a subset of empirical properties can be regarded as 'comparatively intrinsic' since they preserve a sense of intrinsicness while being fully relational (section 5). I will conclude by showing that real changes can take place in the phenomenal realm if they concern comparatively intrinsic properties of objects (section 6).

2. The problem of global relationality

Why are relational properties not easily reconcilable with real changes? Take a typical example of non-relational property, namely the shape of an object. It is intuitively the case that to a change of this property corresponds a real change in the object. Consider, however, the relational property 'being outgrown by Theaetetus' that Socrates acquires at a certain moment in time (a classic example famously discussed by Geach 1969). While Socrates acquires a new property, the acquisition of such a property is not accompanied by any real change in Socrates (Socrates's height and, arguably, anything else concerning his body do not change). Similar relational properties may be 'being one hundred km from Paris' or 'becoming famous'. In the contemporary literature, they are known as Cambridge properties, and the changes they give rise to Cambridge changes.

When analysing relational properties, it is therefore important to understand whether they are Cambridge and if they can give rise to genuine changes. Note that Cambridge properties are compatible with real change(s) at the local level. In our example, the Cambridge property (Socrates' being outgrown) is dependent on the genuine change of something else (Theaetetus's growing). Things are different if we imagine a world where there are no intrinsic properties—call this the problem of *global relationality*. If this scenario obtains, there seems to be no easy way to vindicate genuine changes, for there are no intrinsic properties we can appeal to.

Since Kant is committed to the claim that phenomena have no intrinsic properties (PR), there seems to be no local solution available to accommodate changes. Are all empirical properties Cambridge properties to which no real change corresponds? In other words, can phenomena be efficacious at all? To answer these questions, we need to introduce some definitions.

3. Relational properties defined

'Being the pupil of', 'becoming taller than', 'being next to' are all examples of relational properties. All such properties involve relations between different items. Note, however, the following complication. 'Being identical to itself' or 'being larger than its parts' are also properties involving relations and yet they are plausibly classified as 'intrinsic properties'.

They establish a relation between an item and itself or its parts. A way to formalize the insight that, typically, relational properties involve *different* items (hereafter, d-relational properties) is to define them as follows:

    (1) F is a d-relational property of an item x if there is a relation R, and an item y, such that x's having F consists in x's bearing R to y, and *y is different from x*.[1]

Having defined typical relational properties, we can also specify intrinsic properties as properties that are not d-relational:

    (2) F is an intrinsic property of an item x if x has F, and F is not a d-relational property of x.

Note that (2) allows some intrinsic properties to be relational. 'X's being identical with itself' is a relational property but it is not a d-relational property since the relation does not involve different items. It is thus an intrinsic property. Kant operates with a similar conception of 'intrinsicness', reflecting the insight that what is intrinsic to something must be independent from what is different from it. He says:

> Only that is internal that has no relation (as far as the existence is concerned) to anything that is different from it. (A265/B321; see also A283/B339).

Importantly, relational properties defined as (1) are not necessarily Cambridge properties. Let's use Geach's example again. Theaetetus' becoming taller than Socrates is a d-relational property, but a real change corresponds to it: Theaetetus's height has changed. This property is partly d-relational and partly grounded in the intrinsic features of Theaetetus. A Cambridge property, instead, must be fully external or extrinsic. We can formalize this intuition as follows:

    (3) F is a Cambridge property of an item x iff x has F, and for any properties G1, G2, ... Gn such that x's having F consist in x's having G1, G2…Gn, neither G1, ... nor Gn are internal properties of x.[2]

Socrates' being outgrown by Theaetetus does not consist in any intrinsic property whereas Theaetetus's outgrowing Socrates is indeed partially grounded in (and therefore consists in) an intrinsic property (his growing). To put it differently, Cambridge properties are those properties that are 'furthest', as it were, from an item.

This brief (surely not exhaustive) discussion of properties should put us in a better position to evaluate Kant's own view. First, we briefly saw that for Kant properties of phenomenal substances do not have any intrinsic properties. As a result, they seem to fall within the above definition of Cambridge properties (3). But if all empirical properties are Cambridge properties, there seems to be no space to admit genuine changes in nature. I outline below the strategy that I find most promising to solve the problem.

4. Kant's phenomenal relationality

I submit that a plausible way to solve the problem consists in getting clearer on the *type* of relationality that is at stake in Kant's phenomena. Recall that PR is explained as resulting from

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[1] The definitions in this section are adapted from Francescotti 1999.

[2] Where 'consist in' means that F and G refer to the same instance of the property.

the relation between 'something in general' and our senses. This is a highly general claim that must be specified. In fact, having a mere relation to something (in this case, our senses), even a necessary one, is not sufficient to ground a claim like PR. As we just saw, something can be relational and yet grounded in the intrinsic properties of things.

In several places, Kant specifies that the relationality of outer appearances is grounded in their being in space and in space being relational (e.g., A284/B340). PR must therefore be justified by the features of the spatial givenness of phenomena. One of the clearest expressions of this thesis is in the *Prolegomena*. Kant says:

> Now, space is the form of outer intuition of this sensibility, and the inner determination of any space is possible only through the determination of the outer relation to the whole space of which the space is a part (the relation to outer sense); that is, the part is possible only through the whole, which never occurs with things in themselves as objects of the understanding alone, but well occurs with mere appearances. (Prol. 4: 286; see also A284–5/B340–1)

Kant here refers to the conception of space as a form of intuition that he fully develops in the Aesthetic of the first *Critique*. Roughly, space is the form of intuition in which outer appearances can be given to us as its 'content' (e.g. A284/B340). Such a form is a whole that precedes and makes possible any of its parts. Kant's claim is not just that outer appearances have a relation to something else. More strongly, Kant is saying that appearances are given in space in such a way that there is no part of space that is possible without the whole (see also, e.g., A24/B38). But if this correct, any determination, including inner determinations, of a part of space consists in the determination of the relation between that part and the whole, i.e. its *outer relations*.[3]

To put it briefly, PR results from the following claims: (i) any outer appearance x is given in space as a part of it; (ii) any intrinsic determination of x is a determination of the relations between x and space, i.e. outer relations; (iii) if phenomena have no intrinsic determination, all their determinations are outer relations (PR). As a result, we can always further specify a part of space into the outer relations it consists in. To conclude, let's call the specific *spatial* sense of relationality that we have just identified 's-relationality'. A suitable definition runs as follows:

(4) S-relationality: a property F of x is s-relational iff it consists in outer relations.

5. Comparatively intrinsic properties

One may think that the s-relationality (4) is a specification of the kind of relationality typically assumed in the contemporary debate (d-relationality). After all, it implies that any property in space consists in some sort of relations. But note that s-relationality is silent on whether outer relations involve different items. An s-relational property can be characterized in terms of the outer relations between different items in space but also, for instance, in terms of the relations between a whole and its parts. Consider the standard example of the height relation between Socrates and Theaetetus. Socrates' being outgrown by Theaetetus is a Cambridge property and Theaetetus's growing is an intrinsic property. But the growing of Theaetetus is a property given in space exactly as Socrates's being outgrown by Theaetetus. Intuitively, Theaetetus's growing

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[3] I here understand 'x is only possible through y' along the lines of 'being a bachelor is only possible through being an unmarried man'. In other words, x *consists in* y (in accordance with Kant's claim that the inner determinations of phenomena *consist in* relations).

can be explained in terms of the parts of his body changing their reciprocal relations in space, exactly as Socrates's being outgrown can be explained as a change in the external relations of Socrates.

I suggest that Kant's PR presupposes an unconventional sense of relationality (at least from a contemporary perspective). This sense of relationality can be further specified according to the various kinds of property that we have seen in section 3. In other words, I propose that Kant has the resources to draw a distinction between intrinsic and non-intrinsic properties *within s-relational properties*. That this is possible is of the utmost importance to vindicate a genuine sense of change among empirical properties. If all empirical properties were Cambridge properties, Kant's phenomena could not accommodate real changes. But if some empirical properties can be singled out as at least partially intrinsic, as I shall further show, Kant would have a convincing reply to the challenge of global relationality.

This solution is grounded in the text. In several passages Kant claims that it is possible to identify "comparatively inner properties" and that these properties play a key role in our explanation of natural processes. For example:

> What pertains to it internally I seek in all parts of space that it occupies and in all effects that it carries out, and which can certainly always be only appearances of outer sense. I therefore have nothing absolutely but only comparatively internal, which itself in turn consists of outer relations. (A277/B333; see also A285/B341)

On my reading, "comparatively internal" properties are s-relational properties that preserve a sense of intrinsicness. These properties consist in outer relations (as per 4) without, however, involving different items (as per 2). I suggest the following definition of comparatively intrinsic property (or c-intrinsic property):

(5) F is a c-intrinsic property of x iff (i) it consists in outer relations and (ii) x has it even if no empirical object wholly different from x existed.

(ii) expresses the idea that a c-intrinsic property is a property an object has in itself, i.e. independently of other objects. A couple of remarks are in order. First, the sought independence of c-intrinsic properties concerns the realm of phenomena and is therefore limited to empirical objects. Second, the fact that the accompanying empirical object must be wholly different from x allows a property F of x to be intrinsic even if x is accompanied by something with which it shares parts. As Kant puts it, we identify what is intrinsic to an object by analysing its *parts* and its *effects* in space. In both cases, the internal property of an object is analysed away into outer relations that, however, do not depend on other objects.[4]

Although I cannot offer a complete taxonomy of comparatively intrinsic properties here, the following examples should make Kant's view more intelligible.[5] A classic example of intrinsic property is the shape of an object. The shape of an object is a c-intrinsic property since it consists in the outer relations between its parts, without involving any different items. In natural science, it is typically the case not only to reduce a whole to its parts but also to the causal interactions between its parts. To use a Kantian example, impenetrability of a part of matter (x) results from the casual relations between its parts (mutual repulsion). Since these parts are not wholly different from x, x would have F even if no wholly different objects existed—it is

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[4] For further complexities about defining intrinsicness, see Langton & Lewis 1998.
[5] For a more exhaustive discussion of these issues, see Warren 2001.

therefore a c-intrinsic property of x. Finally, some c-intrinsic properties consist in the outer relations that objects can have to others if the right stimuli are in place. For example, a sample of gold possesses the c-intrinsic property of dissolving in *aqua regia* under appropriate conditions. Since the sample has this property even if unaccompanied by any other empirical object, it is plausible to maintain that is one of its c-intrinsic properties.

6. Comparatively intrinsic properties and real changes

I argued that Kant has a plausible strategy to combine the insight that an intrinsic property is a property that something has independently of any other object with the critical result that phenomena are relationally given in space. A c-intrinsic property is relational since it consists in outer relations, yet it is 'intrinsic' inasmuch as it can be unaccompanied by different empirical objects. In other words, it is intrinsic *in comparison to* properties that, instead, requires other objects, i.e. properties that are only partially grounded in intrinsic properties and, most importantly, properties that are fully relational (Cambridge properties).

Identifying the hybrid category of c-intrinsic properties allows to answer the challenge of global relationality. Recall that the challenge presupposed a world where no intrinsic properties could be identified. But the previous analysis has shown that Kant's commitment to relationality is compatible with there being real changes pertaining to the "inner in things" (see A277/B333). Such changes are changes of the c-intrinsic properties of empirical objects, i.e. properties that an empirical object has independently of any other. If this is the case, we can indeed locate change in the 'inner nature' of specific objects.

Let me conclude this analysis by pointing out that if there can be genuine changes within phenomena, these are the changes that are most relevant to natural science. For natural scientists plausibly seek to understand the conditioning relations among objects and the real changes they give rise to. As Kant puts it, by looking at the effects they seek to "penetrate into what is inner in nature" (A278/B334). Comparatively intrinsic properties and their changes represent the proper target of natural investigation since their metaphysical independence affords an explanatory power that other properties do not have. Of course, this is only the sketch of an argument. I leave to another occasion the explanation of how the metaphysics of properties and the explanations of natural processes are related in Kant.

References
Chignell, A. & Pereboom D. 2010. "Kant's Theory of Causation and its Eighteenth-Century German Background," *Philosophical Review*, 119.4, 565–91.
Francescotti, R. 1999. "Mere Cambridge Properties," *American Philosophical Quarterly*, 36.4, 295–308.
Geach, P. 1969. *God and Soul*, Routledge.
Heil, J. 2005. "Dispositions," *Synthese*, 144, 343–56.
Kant, I. 1998. *Critique of Pure Reason*. Ed. by P. Guyer and A. W. Wood, CUP.
——. 2004. *Prolegomena to Any Future Metaphysics*. Ed. by G. Hatfield, CUP.
Langton, R. & Lewis D. 1998. "Defining 'Intrinsic'," *Philosophy and Phenomenological Research*, 58.2, 333–45.
Shoemaker, S. 1980. "Causality and Properties," in *Time and Cause*, ed. by P. Van Inwagen, Springer.
Warren, D. 2001. *Reality and Impenetrability in Kant's Philosophy of Nature*, Routledge.
Watkins, E. 2005. *Kant and the Metaphysics of Causality*, CUP.