Against Their Own Intention: Problematic Consequences of Ontological Emergence

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1. The aims of Emergentism

Basically emergentism has a *naturalistic understanding* of reality: Everything that exists is constituted by basic material particles and is thus, at least in principle, accessible to natural sciences. In terms of taking the discoveries of natural sciences very seriously for epistemological and ontological claims, emergentism is sympathetic to physicalist positions. However, according to emergentism, a thoroughgoing reduction of reality from the complex to the less complex to the point of basic material particles is not possible. Even if complex systems are composed of basic material particles at a certain point of complexity, complex systems begin to exhibit new emergent properties which are neither reducible to nor explicable out from the basic particles composing that specific system. At this point emergentism departs from physicalistic positions with a strong reductionist smack: It denies that certain phenomena in the world must ultimately be explicable in terms of physical laws and facts. The so called 'hard problem of consciousness' consisting in the lack of any bridging theory for the explanatory gap between the physical and the mental world faces the emergentist with 'natural piety': It is not a hard problem because there is nothing to explain. Rather it is a brute fact of reality that has to be accepted as it is.

We could say that an attitude of natural piety is in the same breath a concession to common sense assumptions of reality: Certain phenomena in our world, though depending from the physical, are not ontologically reducible to it. The outstanding candidate of such a conception of emergent phenomena is our mental life. So far so good. At this point we can turn our attention to O'Connor et al's account of emergentism and the wider ontological framework they provide.

2. O'Connor et al.'s version of OE

We can characterise OE with the following theses:

(1) Every entity in the world which has causal powers is constituted by simple particulars.

(2) An emergent system must be able to "cause downward" if it is existent.

(3) If a system is emergent, then it has some systemic, non-reductive properties, which are not owned by the constituting parts of the system.

OE, as far as presented here, is not a general ontology (cf. O'Connor/Jacobs 2003). (1)-(3) are (merely) ad-hoc-claims which need both (empirical) justification and (ontological) amendments. Thus, OE needs to be embedded into a general ontology which O'Connor et al find in trope ontology.

In Campbell's version of TO tropes are individual properties which are able to co-exist with other tropes at the same location. According to TO, what a person really is, is a *bundle of tropes*. But the basic version of TO is not able to catch the intuition that there are "enduring yet changing" (O'Connor / Jacobs 2003, 551) objects. This will require a concept like (Aristotelian) substances, that is, the concept of an entity which exists ontologically independently, is the bearer of various properties, remains the same through time and is subject of (accidential) changes. A concept of tropes which takes over the job of Aristotelian substances as well has been developed by Simons (see Simons 1998). In Simons' nuclear theory kind of TO a bundle of co-located tropes, which are interdependent in their existence, serve as base of an enduring system. Other, so called 'accidentals'- tropes, are not part of the interdependent nucleus. What we call an accidential change is a change of existence of an accidental trope that is co-located with a nucleus bundle of tropes. Though O'Connor et al. are sympathetic towards this account, they do not adopt it. In their opinion, Simon's TO, if combined with OE, will result in substance dualism:

> "In order to adhere consistently to the proffered analysis of individuality, one should say that the result would be an emergent individual if and only if a plurality of emergent tropes constitutes an enduring nucleus, one that will invariably be accompanied by more short-lived accidental emergent tropes. Suppose this to be so. Here it seems that we finally have the makings of a true substance dualism." (O'Connor / Jacobs 2003, 552)

Thus, the best interpretation of TO will be a "substance-attribute version" (O'Connor / Jacobs 2003, 550). This interpretation is similar to the ontology of immanent universals. In addition to the bundle of particular tropes there is a "holistic" trope of *thisness*. Thus, a human organism consists of a bunch of tropes plus a holistic trope guaranteeing "thisness" and endurance of a particular human organism. In combination with OE the substance-attribute version of TO behaves just like the ontology of immanent universals.[1]

Since O'Connor et al. seem to favour TO, we will treat OE with TO as their standard general ontology. This ontology has the following features:

1. Every entity is constituted by material simples.
2. There are basic composite systems, consisted by the simples, which are "capable" to constitute the identity of an emergent individual "by a continuing manifestation of smoothly evolving emergent psychology bound up with an underlying flux of micro-level basic trope-bundles and temporary emergent tropes" (O'Connor / Jacobs 2003, 551-2).
3. The relation between constituent parts and the emergent individual is a causal one: The material simples, in virtue of being co-located with some tropes, *cause* an emergent property to exist.
4. The emergent individual, or substance, as O'Connor et al. call it, is the whole composite system with both the basic, low-level properties and the emergent,

[1] As far as we can see, the only difference between the favoured TO and the favoured ontology of immanent universals lies in their treatment of the individuality of an emergent substance. In TO the emergent substance gets its individuality out of the particularity of the tropes, while in the ontology of immanent universals the substance is an individual by its own.

high-level properties. Some of these properties are of special interest, because they determine the special substance-kind of the composite system.

5. The endurance of an emergent substance is based upon the basic underlying "maintenance" tropes; the individuality of an emergent substance is based upon particular (holistic) tropes; and the ability of the system to be causally effective in ways different than its parts is based on emergent properties, which are caused by other lower-levelled tropes.

3. A critique of this proposal

We welcome the overall project of O'Connor's et al.'s approaches, especially their scepticism towards introducing all too soon many emergent levels in reality (see e.g. Morowitz 2004 who states 28 levels of emergence) on the one hand and their defence of a robust realism of our mental life. Nevertheless, we believe, that these approaches are doomed to fail; at least some of their consequences are more than problematic.

3.1 O'Connor's endurantism:

Although according to Ockham's razor trope ontologies are 'elegant and simple' in the sense of getting along with only one kind of entity, O'Connor's et al.'s construal of human persons appears to be rather complicated: Apart from "maintenance tropes" which are the building blocks of reality in general, temporary emergent tropes guarantee for the existence of our mental life. It seems, however, that this is not enough for accounting for a person's particularity and unity. O third kind of tropes is needed, namely holistic tropes providing endurance for the trope-complex consisting of physical and mental properties. We can concede to emergentists that the mental-physical divide accounts for the scientific and the manifest image of ourselves and the divide must be accepted with natural piety. The introduction of holistic tropes as realisers of endurance, however, is a postulation which implies a stronger claim than O'Connor's et al.'s recent account can provide.

The problem of personal identity can be framed as follows: Why are A today (A_1) and A yesterday (A_2) the *same* person? Basically two answers can be given to this question. According to the simple view A_1 and A_2 is the same person *because* the notion of 'diachronic identity' is primitive and basic. For this reason we cannot *explain* diachronic identity but we need this notion to explain other things. According to the 'complex view' connections of some kind ('space-time-continuity', 'causal relation' etc.) between A_1 and A_2 account for a person's identity through time. In this case the identity of A is constructed out of a continuous series of 'time slices', A_1, A_2 etc. which perdures through time (see Quante 2002, 29-31).

O'Connor et al. are committed to the endurance theory. While TO prima facie is neutral to the endurance-perdurance debate, we think that – especially when connected with OE – TO *must* commit to the complex view and therefore to a perdurance theory. Otherwise TO is just a version of substance ontology in a new clothing with implausible premises.

For TO A_1 is a bundle of different tropes, say $\{T_p, T_1, T_2 \ldots T_n\}$, while T_p is the *thisness*-trope (which has a family resemblance to the nuclear trope-bundle in Simon's TO). If one wants to commit to both, TO and the simple view, she must content that a trope is a three-dimensional entity, like an Aristotelian substance. The concept of TO does allow for this. But difficulties arise when we want to combine all three theses: TO, OE and the simple view.

O'Connor et al. suggest that an emergent trope is caused to exist by lower-levelled tropes. Assuming that the person A_1 is the bundle B_1 ($=\{T_p, T_e, T_1, T_2, T_3 \ldots T_n\}$), while T_e is a bundle of emergent mind-tropes which are caused to exist by T_p, T_1, T_2 and T_3. Two different kinds of endurance can be imagined: First, T_e is itself capable for endurance, so the diachronic identity of A is *not* based on the diachronic identity of T_p, but on the diachronic identity of T_e. alone O'Connor et al. will scrap this version of OE for its dualistic character.

According to the second version, T_e is *not* enough to guarantee the diachronic identity of A_1, so the diachronic identity of A is based upon the diachronic identity of T_p. This concept has some interesting consequences. The *thisness*-trope T_p is serving as the base for the "thinginess" and for diachronic identity of the bundles B_1 and B_2. When we assume, that T_p is a basic and non-emergent trope[2], T_p is really the Aristotelian kind, to which B_1 and B_2 belong to. This concept comes very close to the Aristotelian Kind-essentialism, which O'Connor et al. reject. So T_p cannot be a basic, non-emergent trope.

Let us assume that T_p is itself an emergent trope, caused to exist by the tropes, say, T_4 and T_5, both of them truly basic tropes. The same problem, which we encounter while treating the relation between T_e and T_p, arises again. We will get a substance dualism, if T_p can exist independently. So we conclude that T_p in order to be the same trope over time must depend on T_4 and T_5.

By doing so, we have successfully *reduced* diachronic identity of T_p to the diachronic identity of T_4 and T_5. If we admit that the diachronic identities of T_4 and T_5 are not simple, but consist in some causal relation, this version of diachronic identity will be a complex, but not a simple one. If we assume that the diachronic identities of T_4 and T_5 are simple, we will still have the problem that the ontological constitution of T_e is not non-structural in the sense of O'Connor et al., but it consists, at least partly, in T_4 and T_5. This contradicts with the version of OE as proposed by O'Connor et al. Thus, it seems that it remains an unsolved problem how diachronic identity shall be provided by TO.

3.2 O'Connor's understanding of living beings

As already mentioned before, the status of thisness-tropes is rather unclear. It seems that only emergent individuals have one. The only emergent individuals O'Connor et al. are explicitly committed are human persons:

> "Biological life, so poorly understood in the early twentieth century, was the favorite target of earlier emergentists. Now, of course, the epistemic situation is dramatically different. With the chemical basis of life being further charted with each passing year, there is no positive reason for us to suppose that emergent factors are essentially involved" (O'Connor & Wong 2005, 674).

Such a view of emergence taken together with the ontological position that complex objects lacking emergent features (which according to O'Connor et al. living beings most likely do) are "no more objectively there than an arbitrary scattered object that one might choose to name"

[2] We assume that this is not a welcome option for TO, since with this concept many unanswered questions arise, e.g. the question where such a thisness-trope comes from at a certain point.

(O'Connor / Jacobs 2003, 550) leads to the conclusion that the only composite beings in a robust sense are human beings. Systems lacking emergent features, "however much they may appear to be unified to the uneducated eye, are individual objects only by a courtesy born of practical concerns." (O'Connor / Jacobs 2003, 547)

In this concept the only real composite entities in a world of loose mereological sums of particulars would be human persons. Such a view would exceed van Inwagen's argument that the only existing material beings are either living organisms or simples, because according to O'Connor et al. ultimately only human beings and simples exist. Apart from the fact that such a view has an extreme revisionary character it seems to contradict to biological facts as well. There are good reasons to distinguish between living beings and "arbitrary scattered objects". In terms of their inner structure and composition even though actions and reactions of living beings might to a large extend be understood as results of given microscopic processes and external conditions. O'Connor et al. show sympathy for such a disintegrating view of those living beings without emergent features, This could be the result of an overestimation of the explanatory force of reductionism plus a misconception of living being's metabolism and boundaries. O'Connor et al. are not explicit of whether processes are part of their trope ontology but certain formulations suggest they have processes in mind when talking about interactions among tropes. If living beings are just bundles of tropes interacting on a micro-level and thereby "producing" for the uneducated eye the illusion of substantial unities, so O'Connor's et al.'s view comes very close to Zimmermann's equation of living beings with processes like tornades and waves: "(…) upon careful thought, the similarities between the activity of certain self-perpetuating events like tornados and hurricanes, on the one hand, and the 'homeodynamic' processes involved in biological life, on the other, might make us reconsider a facile dismissal of this (…) suggestions." (Zimmermann 1995, 91)

In this case living organisms are understood as mere processes. Even if it might be right to see an analogy in the persistence of a tornado and in the persistence of an organism since in both cases the persistence is based on a constant exchange of particles, the entity which persists is in each case a different one: The form of a tornado is merely the sum of all micro-particles constituting it. Due to the sum of these micro-particles and their interactions the tornado might appear as a persisting object with determinate boundaries. The boundaries of a tornado, however, are nothing else than the boundaries of the sum of the tornado's micro-particles. In the case of living beings, instead, metabolism and metabolic transfer take place through an already existing boundary of the organism's body. A distinction between an organism's body and metabolic processes has to be hold up for an adequate understanding of this facet of reality. We do not want to dwell longer at this point but it seems to be indispensable to interpret living beings as ontologically different from mere compounds of micro-particles.

For O'Connor et al. it might be quite difficult to bring "biological unities" back into the picture once the decision was made that the world's main ontological category are simples. Then one has the task to bring biological organisms and human beings back to the fore. If one, as O'Connor et al. are, is reluctant to postulate a variety of emergent levels, then the "dual" solution of simples and emergent human individuals seems to be the only viable way. Dualism within human beings might be avoided by this approach but another form of dualism lurks: A dualism between human beings and the rest of the world. As true individuals we are desperately alone among an indefinable sea of particles. All the other things we assume there are with our common sense are just pragmatic posits out from these masses of simples because of contingent human interests and purposes.

4. Substance-Based Ontology as an Alternative

It might be asked whether with an alternative substance-based ontology it is not possible to achieve what O'Connor et al want to have but for a lower price. The substance-based ontology we have in mind belongs to the strand of Aristotelian hylemorphism (AH). According to AH only three-dimensional substances endure; they are thought to be ontological *primitive*, and therefore the building blocks of reality. Other entities like events and properties can only exist in virtue of the existence of substances. While each substance belongs to a certain natural kind, the kind itself does not exist separately from substances. In a nutshell, substances are bearers of accidential properties, and changes are interpreted as coming and going of acccidential properties. Substances can have parts. But parts of a substance are ontologically subordinated to them. Since a substance is thought to be genuine three-dimensional, its diachronic identity is truly simple and cannot be reduced. (Cf. Lowe (1998), 121-125)

What is the status of OE within such an ontology? Can we combine a substance-based ontology with OE? The answer is "yes and no". Since in hylemorphism basic existent entities are substances, there is no need for emergence theory to explain how special emergent property arise out of parts which do not have these properties. Since there will be *no* emergent properties, but only properties of substances, we do not need OE anymore. Emergentism can still be useful to hylemorphism, though. If an arbitrary system expresses no emergent behaviour, than it is not a substance; if this system has an emergent feature, then it should be called substance, but not its parts. If this combination of substance-based ontology with emergentism is sound, emergence theory will be merely an epistemic help for AH, but not an ontological position anymore.

But how should we solve the mind-body-problem? We cannot discuss the full solution of the mind-body-problem within the substance-based ontology; only some hints should be given here to draft an answer. In AH "having mind" is a special property which can be obtained by human beings, and perhaps higher primates. Since the kind of properties a substance can instantiate depends on the substance-kind, and since every actual property is the realisation of dispositional properties, also the property "having mind" should be regarded as a disposition of human beings. We remain neutral on whether this property is accidential or essential. But in this concept 'having mind' is just another property of a human substance, but not itself a substance. Thus, substance dualism is avoided.

5. Conclusion

It seems that O'Connor et al.'s OE, despite its prima facie potentiality to harmonise everyday intuitions with scientific findings, still presents itself as a revisionary concept with strong revisionary elements. We have presented a draft on how emergentism and AH can be harmonised. The bad news for emergentism is that its strong version-ontological

emergentism- is not needed anymore. The good news is that the concept of emergentism is still useful as an epistemic help to distinguish substances from “scattered objects”.

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