

Constitutive Whole and Virtual Reality

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We start with the observation that unquestionable *top-down* experiments concerned with constitutive wholes (CW) are not on record. Indeed, such experiments are theoretically impossible, mainly because a CW is *exclusively* dependent on its components. Therefore, surprisingly, it cannot interact, it lacks causal power. I suggest that CWs are not real, that they are constructs due to our neuro-mental grouping and ordering. Thus they are fictive, the CWs are representations without denotate. Notably, such representations participate in simulations in the context of our internal world model. Here virtual interaction is attributed to them and from here they project into the outer world.

Thus much of the so-called outside reality is neither outside nor real. The philosophical position obtained, a partial solipsism based on physicalism, tends to up-value faculties and achievements of the human mind.

1. TOP-DOWN EXPERIMENTS MODIFYING CONSTITUTIVE WHOLES ARE NOT POSSIBLE

Top-down experiments attempt to modify a property of a constitutive whole (CW) and observe resulting changes of its components, as recently described in detail by C. F. Craver and W. Bechtel (e.g. Craver 2007; Craver and Bechtel 2007). These attempts have a long tradition. Technically, such experiments would require direct interaction of an outside agent or object with the constitutive whole. I have argued that such interaction is not possible because a constitutive whole has a *permanent and exclusive dependence* on its components (Lindemann 2010a, 2010b).

'Exclusive' means that *all* components but *only* these and their relations constitute the whole. The dependence, one of existence of the whole, extends to all properties, including the emergent property of the whole (resulting from concerted action of components), resultant properties (shared by whole and components as emergent properties on lower levels (Lewes 1875; Bunge and Mahner 2004)), population average properties (temperature), additive properties (mass, volume) and other over-componential properties (like shape). Situating a whole in space and time is also dependent on the situation of its components in space and time.

Any interaction of outside agents or objects with the whole would be incompatible with the exclusiveness of this dependence, since outside agents or objects are not components of the whole. Rather, the change of a whole is initiated by causal interaction of an outside agent with a component (*bottom-bottom*). The resulting change of the component is accompanied by a *bottom-up* instantaneous readjustment of the whole. This is the only way to change a CW, by constitution.

The top-down path from CW to components is barred in two ways. It is not passable by constitution because the constitutive relation is asymmetric. The whole is constituted of components, not *vice versa* (e.g. Lindemann 2010b). And it is not passable by interaction. For the CW cannot encounter for interaction in space and time what is contained in the CW itself (e.g. Craver 2007; Craver and Bechtel 2007).

Little wonder, therefore, that indisputable *top-down* experiments involving constitutive wholes are not on record.¹

¹ It is true that an interesting *correlation* is often found between phenomena on levels *n* and *n-1*, but this does not prove that the *top-down* approach from level *n* to *n-1* was taken in obtaining the correlation.

2. SWITCHING

Yet, in our common-sense understanding it remains indisputable that wholes can interact. *A stone thrown will smash a window as a stone*, irrespective of our academic knowledge that the stone consists of crystals and atoms. Here we simply *disregard* that the stone is constituted of components. Instead we stress over-componential properties of the stone like size, shape and weight.

A herd of buffalo will come to the lake for drinking. Here we disregard that the herd is constituted of animals and that it will be the animals which are drinking. By grammatical structure we pretend that the herd interacts with the lake in the act of drinking. *The troops march, sing a song, the armies clash*, we disregard the role of the soldiers, stress the over-componential properties of the army like numerical strength, tradition or nationality.

Apparently we can switch on and off the constitutive aspect of an object, or, rather, of its representation. When we switch this aspect off, we focus on the over-componential properties of the constitutive whole. We disregard that even these properties, if owned by a constitutive whole, are directly dependent on those of the components.

3. WHOLES AS CONSTRUCTS

Properties of real objects² can be changed by interaction while properties of fictive objects (e.g. of abstracta) cannot be changed (Bunge and Mahner 2004). Therefore the above conclusion that wholes cannot interact suggests the possibility that wholes are fictive rather than real. Like abstracta they may be products of our thinking, may depend on our grouping and ordering.

I suggest that we merely imagine wholes and imagine their (impossible) interactions, as when a stone smashes a window. The real interactions occur not at the level of the stone but among its components. These components our ordering places on a lower system level. Reality does not put things into such order, it may know the ultimate basic level only.

2 Real: what is independent from our neuro-mental activity.

As we shall see below, whenever we talk about objects on system levels above the ultimate level, we mean virtual objects (representations) with fictive denotates.

4. REPRESENTATIONS

What we commonly call *real objects* are in truth macroscopic consequences of microscopic phenomena. The latter are largely inaccessible to our senses and instruments. Of the apparently real objects we construct neuronal representations which compile their apparent properties. The apparently real object (the denotate of the representation), while in part an artifact of our senses, is otherwise considered independent of our thinking. The common understanding is that the denotate is situated in space and time and can be changed interactively. (However, in a hierarchical system causal drainage suggests that interaction occurs not at the level of the denotate but at the bottom-most basic level only (see below).)

Of fictive objects we also make representations, but these, of course, have no denotate in reality. Constitutive wholes have such fictive denotates, they are constructs without real-world interactive power. Rather, being members of our virtual world, they have Brentano-intentionality, meaning that they are about something (the imagined denotate).

The representations, those with apparently real and those with fictive denotates, have a neuronal and a virtual aspect: (a) They are real in the sense that the neurons involved apparently interact in space and time in the fashion of neuronal mechanisms. Thus the *representation-mechanism* is at first sight real. (b) They virtually link a denotate with the symbolic or more detailed representation of the denotate. The representation possesses the space-time designation associated with its denotate (or with the components of its denotate). This virtual space-time allows the representation to participate by virtual interaction in simulations. Here rules (as far as they are known to us) are applied to representations in order to predict their behavior. Such simulations are part of the scenic, multi-modal content of our internal world-model.

5. CAUSAL DRAINAGE

We distinguish reality or the real world (what is independent from our neuro-mental activity) from the virtual world, a product of our neuronal mechanisms. In the real world interactions occur at the ultimate basic level.³ A hierarchical system of levels is absent. In the virtual world a hierarchical system of levels is present and interactions are imagined to occur at any level (see point 6).

The virtual system is supposed to simulate the real world with sufficient fidelity.⁴ This real world, however, in as far as it consists of constitutive wholes, is an illusion. Yet the simulation proceeds, guided by the fact that the illusive constitutive wholes are founded in the ultimate basic level.

Causal drainage, as controversially discussed in (Kim 2003; Block 2003; Kim 2005), was usually imagined to occur in the real world. Instead, we begin to see it as a phenomenon of our virtual world because, as John Heil put it, “Reality is not hierarchical...” (Heil 2003).

In a hierarchical system constitutive wholes are placed on system level n and their components one level down, on level $n-1$. Suppose, as in point 1, that a whole cannot interact causally while its components can. Now consider that the components on level $n-1$ are themselves made up of smaller components found on level $n-2$. Only these can interact causally. However, these components are made up of even smaller components on level $n-3$, and so forth.

This drainage continues until a level is reached which harbors objects not made up of components. Here interactions are supposed to occur which relate to real interactions at the ultimate basic level. This as long as space and time, concepts required for causal interaction, remain applicable.

Now we suppose that the drainage occurs not in reality but in the virtual world. Here, in the virtual world, the series breaks off before the ultimate basic level, at a point where our knowledge and our imagination fails.

That is not a serious loss because complete drainage, down to the ultimate level, is not very helpful for every-day purposes. The loss of familiar concepts like space

3 The most basic level contains objects which cannot be divided into components. Only these objects, inaccessible to our senses, are real in the strict sense. John Heil came to a similar conclusion when he summarized “Reality has but one level...” (Heil 2003).

4 While fidelity is limited by the integrative nature of our senses, this may have little every-day disadvantage.

and time, the huge number of minute objects and their strange properties (as specified, say, by particle physics) tend to preclude their ready use for explanations of higher-level phenomena.

6. THE PRAGMATIC BASIC LEVEL

Therefore, let us choose a basic level which suits our purposes. Starting from the above hierarchy of virtual system levels, we select a level where interactions should take place. To avoid unnecessary detail we pick this level as high as possible, yet as low as necessary for reductive explanations. For instance, if we are interested in biological phenomena, we choose a sub-biological level of atoms or molecules as the interactive basic level. Then all our interactive (virtual) objects are atoms or molecules. Above this pragmatic basic level will appear higher levels containing constitutive wholes.

7. LEVELS OF DESCRIPTION

It is common understanding that the phenomena of level n are subject to reductive explanations with concepts and idiom of the basic level chosen, $n-1$. However, if the hierarchical system of levels is part of our virtual world, then level n contains not the phenomena themselves but symbols and representations of entities at level $n-1$ and descriptions of events occurring at level $n-1$. The concept of reduction must be modified accordingly. Not the phenomena but only their representations are to be reduced.

In principle our virtual world deals with symbols and representations referring to real and fictive objects and with the description of their interaction. Each hierarchical level n has Brentano-intentionality, it is *about* the level below, describes events at level $n-1$. These events, now, are granted virtual reality if their level $n-1$ is chosen as the pragmatic basic level. Then levels below $n-1$ are disregarded. It is neglected that the next lower level ($n-2$) exists and contains symbols referring to level $n-3$.

In summary, the level of interest is always made the pragmatic basal level. Here causal power is attributed to representations and lower levels are disregarded.

8. THE ATTRIBUTION OF REALITY

In our above approach we *disregard* (switch off) that objects of the pragmatic basic level are made up of components. This is the same disregard which we noted under point 2. There a stone at level n was granted the power of interaction by disregarding that it was made up of components at level n-1. Of course we may make use of our insight that it is not the stone but our representation of the stone which gains or loses the power of (virtual) interaction.

Switching off the constitutive aspect of a whole at, say, level n means to choose level n as the pragmatic basic level. Thus the attribution of reality and interactivity is moved upwards by one level. Thereby all constitutive wholes of level n can be treated as *virtually real*. Such representations have non-interacting (fictive) denotates but are treated in our world model as if they would interact.

Virtual reality is a necessary feature of simulations, where rules of interaction are applied to representations, irrespective of their fictive nature. Actually, this is a reification.⁵ Yet it is done by everybody whenever needed. For, clearly, such flexible switching maintains economy. It avoids the managing of unnecessary detail in our thinking. The reductive series of dependent properties (P), for instance,

$$P_n(\text{many } P_{n-1}(\text{very many } P_{n-2}(\text{very very many } P_{n-3}(\dots))))$$

is broken off earlier, cognitive management of too long a hypotactic structure is avoided.

9. COMING BACK TO POINT 1

In conclusion, in the virtual reality of our world model rules of interaction are applied to representations. While these are constructs without denotates, they may still interact virtually. In those virtual interactions the rules of system theory may be applied. An imagined constitutive whole at level n cannot interact virtually as long as the pragmatic basic level chosen is below n. Yet it can interact virtually while the pragmatic basic level chosen is n. But then, with its components out of sight, the whole is treated not as a whole but as a (virtual) ultimate object. It re-

5 The attribution of causal power to an object without such power (Whitehead 1967).

mains true, therefore, a constitutive whole made up of components cannot interact.

Otherwise virtual constitutive wholes at a level above the pragmatic basal level are representations without attributed causal power. As long as they cannot virtually interact, their role is prerogative only.

10. OUTLOOK

The result obtained touches on the question what exists independently from our mind and what originates from the mind of a humans. A large part of what we conventionally view as real objects of the outside world are in truth projections arising from our neuro-mental activity of grouping, ranking and simulating. In reality there are no denotates at all, what is really outside is not accessible to our senses.

In particular, constitutive wholes as well as system levels are not independent of our thinking. They are not “real” but representations and tools for the ordering of representations, products of our mind.

The conclusion is that much of the so-called outside reality is neither outside nor real. It consists of our constructs which are utilized in our neuro-mental simulations. We thus arrive at a partial solipsism based on physicalism. The position tends to up-value faculties and achievements of the human mind.

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