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CHALLENGES FOR EXPLAINING THE DIFFERENCE BETWEEN OBJECTS AND SYSTEMS IN THE ONTOLOGY OF C. B. MARTIN

Martin wants to expand the philosophical concept of use to non-mental systems. The selection of a directedness for an action has traditionally been restricted by philosophers to mental systems. But Martin has to first explain what a system is. He does this in terms of *use* and by contrasting systems with objects. According to Martin, all objects have directedness (or we may say, dispositions) for various manifestations (see Martin 2007, pp. 1-3; cf. p. 112). A glass is fragile. This fragility is directed *for* the manifestation of breaking. Likewise, systems have their own kind of directedness for certain manifestations called *use* (Martin 2007, p. 111). While use is a directedness, it differs from the directedness of simple objects in that it is a complex, combinatorial, adaptive, adjustive kind of directedness that reacts to various inputs and discriminates for the production of certain outputs (Martin 2007, p. 111). Use, according to Martin, is only had by systems. Objects cannot be said to have use, since they lack the complexity of combinatorial selectivity of inputs against potential outputs. In short, the necessary process by which a glass breaks is not sufficiently complex to be defined as use.

Martin understands the difference between dispositional objects and dispositional systems to be a matter of degree of complexity: “Although there is richness even in simple nonmental dispositionality, we find a far greater degree of richness in the *uses* of input and output of complex, nonmental dispositional systems” (Martin 2007, p. 6. Emphasis Martin’s). The dividing line of dispositional objects and dispositional systems cannot be drawn according to which have for-ness and which do not since both objects and systems are directive and selective

for certain manifestations or outputs (see Martin 2007, p. 112). However, adaptation, discrimination between potential outputs can only be found in the complexity of a system. And it is these capacities and actions that constitute *use*.

While at times Martin seems to only conceive of the difference between objects and systems according to the degree of complexity of directedness, he also speaks of the difference according to *kinds* of directedness or for-ness. We can see this in his definition of use: “Use occurs in a system’s reactivities *to* input and reactivities *for* the production and continuance or alteration of projective output” (Martin 2007, p. 113). Here, the system is *for* something that an object is not and thus differs not simply in its degree but in kind. We can see this difference in kind of directedness borne out in some of Martin’s concrete examples. He asks us to contrast systems operating according to an integrative control center (ICC) with the operation of a bowl of water into which a pebble has been cast. Martin maintains that the water molecules and the bowl molecules “form a complex net that is directed toward a particular output (ripples) given a particular input (the pebble dropping in the water)” but lacks the *kind* of directedness of a system with an ICC (Martin 2007, pp. 120-121).

Unfortunately, Martin does not go into further detail on how we should understand the relation the degree of complexity and the kind of directedness to one another—both of which Martin says form the basis for distinguishing dispositional objects from dispositional systems. So we can only piece together what he says elsewhere about objects and elsewhere about systems to further explain the relation of these differences.

If we seek to relate the different kinds of directedness to the differences in degree of complexity, we may have to say that the difference of kinds of directedness are higher-level expressions of lower-level properties (or, we may say, directedness). Here, the difference of kind

could not be reduced to the difference in degree of complexity but it could be explained by it. Both objects and systems have directedness but a system's directedness is complex to the degree that it arises to the level of a different *kind* of directedness, or, we may say, a different *kind* property or disposition. And so we end up with a system that has higher-level properties that are integrative, adaptive, projective, and alterative. These are higher-level properties that are distinct from lower-level properties where the dispositions are not sufficient for something to have use. An object has different properties than a system, but if what stands in between the properties of an object and the properties of a system is the simply the difference in degree of complexity then we have a case of emergence of properties with overdetermination.

We could explain the effect of a system's use as the lower-level causal interaction of dispositional objects. Yet, we could also try to explain a system's use according to the causal interactions of the higher-level properties of the system which are combining, adapting, projecting, and altering. This would be a case of causal overdetermination (for further discussion of causal overdetermination, see: Heil 2003, pp. 32-34). This may not seem problematic since it doubly ensures that we can explain higher-level properties, but causal overdetermination also means causal irrelevance. The use of dispositional systems need not be explained according to the interaction of higher-level properties. Thus these higher-level properties have no relevance since all the work can be explained according to the dispositional partnerships of lower-level properties.

Martin will have none of this. Talk of emergence between levels of properties is not necessary or fruitful. According to Martin, "The causal work should *not* get done twice over, at the level of relationships among micro-properties and then again at the level of macro-properties that consist only in relationships among those simpler micro-properties" (Martin 2007, p. 130). It

seems that Martin would be happy to explain systems simply according to degrees of simplicity/complexity, but doing so raises questions. Is a system just an object higher up on the scale of complexity? If so, how can Martin say it is different in *kind*? Furthermore, if a system is just a more complex object what accounts for its greater complexity?

Though Martin does not give us this relationship between the degree of complexity and the difference of kind we may relate the two in the following way and thereby explain the difference between objects and systems. A system's complexity comes from being composed of smaller, base physical parts. Each of these base parts is an object which has an array of dispositions. The systems base parts cannot be reduced beyond their dispositions, and thus do not share the complexity of a system (though they do have a rich directedness). The difference of kinds of properties need not be explained in terms of higher-level emergence of properties from lower-level properties (which would avoid the problem of overdetermination). The difference in kinds of properties or directedness between objects and systems can be adequately explained according to the difference in the degree of complexity between them. The system is composed of base parts, but the base parts are not composed of other base parts, they are irreducible beyond their dispositions. A system then has properties that differ in *kind* from the properties of its physical base parts according to the ways in which the properties of the base parts relate. When we speak of the properties (or to combine all of our terms: dispositions, directedness, for-ness) of the system we cannot reduce it to the individual properties (dispositions, directedness, for-ness) of its parts. As Martin writes,

It is a truism that the whole counts for more than the summation of individual parts taken in their separateness....The interrelatednesses and interreactivenesses of parts as *reciprocal partners* bring a congeries of dispositions into *mutual manifestation*; those parts that could not be manifested if they existed separately and without such interrelatednesses (Martin 2007, p. 36).

The difference in degree of complexity *is* the interrelatednesses of the system's base parts. *But once the parts are interrelated as reciprocal partners they bring about a new richness of dispositions (properties, directedness, for-ness) that can now permit us to distinguish the system from its parts (objects) in terms of the kind of directedness.* Out of the complexity of the arrangement or interrelation of the dispositions of the base parts emerges a different *kind* of directedness not had by the parts themselves.

Any emergence of the system's properties from its base parts takes place on the same ontological level (Martin 2007, p. 132). The emergence comes from the interrelatednesses of the irreducible properties, and not from the sum of properties of the individual parts. In this way, the system is reducible. There's nothing left over. To quote Martin, "These interrelatednesses, interreactivenesses, *and* the dispositionality among the parts themselves and whatever might exist external to them for which they might be reciprocal disposition partners—all of these concerning the parts—make up the whole *without* remainder" (Martin 2007, p. 36).

In conclusion, we have seen the challenge that Martin faces by explaining the difference between objects and systems in terms of the *degree* of complexity and the *kind* of directedness. Though he does not make an effort to explain the relationship between the two differences that he mentions, the answer is provided for in his overall ontology. The degree of complexity is explained according to the interrelatednesses of the dispositions of the system's base parts which are irreducible. Since the system can be ontologically reduced to the dispositions of the parts and their interrelatednesses, we can speak of a uni-level emergence. Since the interrelatednesses of the dispositions of the base parts (which is the degree of complexity) are more than the sum total of the dispositions of the base parts we may also explain the difference between objects and systems by differences of *kinds* of directedness (properties, dispositions, for-ness).

Bibliography

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