

# CHAPTER 1

## PARTICULARS, PROPERTIES, AND RELATIONS

### 1.1. PARTICULARS

Space-time is populated by particulars: concrete entities with a unique spatiotemporal location. Objects (stones, chairs, organisms, etc.) are good examples, but masses (heaps of sand, pools of water, etc.) also seem to make good particulars. Scattered groups (such as soccer teams), processes (such as light beams or pressure waves), wave/particles (such as electrons and photons) and fields (such as magnetic or gravitational fields) may be more controversial, but I will not have much to say about these. Events and states of affairs are generally considered particulars, but here some caution is required, as we will see later on. I have to skip issues about propositions, numbers, facts, or negative and disjunctive items; I will not treat these as particulars, but apart from noting that they do not seem to occupy specific space-time regions, I have no heavy-weight arguments concerning them on offer.

Objects are the most salient class of particulars: they have a relatively enduring and resilient structural coherence. Millikan (1984, 291-2) says that they 'retain many of their properties over time in accordance with natural conservation laws'; and even an object's very cross-time numerical identity may in this way be a causal affair. Suppose, for instance, that a particular is individuated by a property such as being an  $F$ , or having such-and-such an internal structure. Then, if that property persists in virtue of some law of physics, this will be a reason to say that the object that is an  $F$  at  $t_1$  and the object that is an  $F$  at  $t_n$  are the very same object.

We may be reluctant to regard certain things, especially living organisms, as mere objects. These are better described as systems. A system may interact as a unit with things in its environment, but it processes, or transforms, causal influence rather than just propagating, or transmitting it. The energy, for instance, that we take from our environment by eating a sandwich or hearing a speech will not be propagated and translated into output in as straightforward a manner as do bouncing billiard balls with the energy *they* absorb.

By specific kinds of interaction with their environments, systems also change in non-coincidental ways, for instance by eating; systems can even

be said to change themselves. Systems are the subject of pioneering study these days: it is claimed that the study of complex systems is an all-new autonomous scientific discipline.<sup>9</sup> But for our present purposes we can regard systems as just a special subclass of objects. We might say that objects are either aggregates or systems, depending on whether or not they have some kind of complex organization.<sup>10</sup>

Let us return to particulars in general. Particulars have a spatial part-whole structure, or mereology: typically, with the exception of elementary particles—if there are any—and of the cosmos, they have smaller parts that are themselves particulars, and they are themselves part of bigger particulars. This suggests—but the suggestion can be resisted—that particulars need not be salient objects, but may also be gerrymandered or scattered groups.

Particulars are also concrete, being able, in Steward's words (1997, 31), to lead a 'secret life.' You can know them partly and discover an indefinite amount of facts about them. You can also fail or come to know that what you thought were two distinct particulars is in fact one and the very same one. Particulars have many aspects, or properties, of which typically only few are known.

Note that a particular's concreteness implies its having a unique spatiotemporal location. We might ask why such a location should be unique: could there not be more than one concrete particular in the same place at the same time, say, a piece of marble and a statue? But every putative reason for supposing this to be the case is in fact a reason for thinking that *one* particular just has one more property.

We will see below that events and states of affairs lack a spatial mereology, are not concrete (although they do have properties), and can share one spatiotemporal location. I will therefore not call them particulars, or particular entities. Some (e.g., Kim) choose otherwise, on the ground that events and states of affairs, although they are not concrete entities, are spatiotemporally located, hence particular.

## 1.2. PROPERTIES

Properties are abstract, rather than concrete: there can be many of them at the same spatiotemporal location.<sup>11</sup> We can define properties as precisely the indefinitely many aspects that concrete particulars have. This is a liberal

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<sup>9</sup> See, e.g., Waldrop 1992.

<sup>10</sup> Note that the difference is *not* that systems are dynamic while mere objects are static. If object identity over time is a causal affair, mere objects are also dynamic.

<sup>11</sup> I here skip the various subtleties connected with the notions of abstract-concrete and particular-universal (see, eg., Macdonald 1998, 333).

view: anything that can be the case with a particular here counts as a property. One might ask for stricter demands: Shoemaker (1980), for instance, claims that causality and properties are interrelated notions, in that anything about a particular that is of no causal relevance whatsoever is not plausibly called a property. In my view such a suggestion makes good sense, but lacking at this point a criterion of causal relevance, it will be wise to leave this issue open.

Properties as such do not seem to have much of a spatial location or mereology: only the particulars that have them do. The paper cup is on the table and has two halves. But its molecular structure or colour are on the table only insofar as the cup is, and they do not themselves seem to have two halves. No doubt, when we consider a particular under just one aspect (the cup as being a thing made of paper, or a red thing), there will be many things to know about the being-made-of-paper or the redness. This might resemble the ‘secret life’ of concrete particulars, but it does not make these properties concrete entities, in the sense of having a unique place and time.

Properties, it seems, presuppose items that have them. On the other hand, we sometimes speak of uninstantiated properties, such as the structure of a non-existent but possible chemical compound. This issue is related to the question whether properties are merely ‘abstract particulars’ (so-called tropes), or universals.<sup>12</sup> Fortunately, these difficult issues can largely be left outside of the scope of my arguments. It is true that the theory of causation that I will defend later on presupposes realism about laws of nature, and it can be argued that the concept of a law and that of a universal are tightly linked. On the other hand, I will argue that by far the most properties (that is, those of other domains than basic physics) do not constitute laws.<sup>13</sup> And I will anyway be concerned only with properties that have actual bearers.

Properties are, as it were, ontologically promiscuous. We do not just speak of properties of particulars or states of affairs, but also of sentences, numbers, facts, kinds, probabilities, etc. The same goes for relations: it is not just particulars and states of affairs that are related, but also propositions, centres, types, meanings, names, regularities—or whatever, regardless of its ontological profile. Note, however, that for such properties and relations to be part of the actual world and not mere possibilities, the existence of specific particulars is required anyway. Also, the properties and relations that will concern us are *only* of, or among, the basic worldly items that our states-of-affairs ontology (to be outlined below) admits: particulars and states of affairs. Not that other properties or relations are unimportant. The reason for

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<sup>12</sup> The issue is about resemblance and the question whether, or how, it should be explicated.

<sup>13</sup> Armstrong (1997, 44) calls such properties ‘second-class,’ denying that they are universals.



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