

Structure of Objects

Objects are usually taken to be made of matter, and to have parts, but a mere volume of matter (inside a mountain, perhaps), or some widely scattered parts, do not seem to amount to objects. Hence we assume that objects are unified, but they also have other features which give them some sort of structure, and any general truths about this will be important for how we understand reality, if we approach it through objects.

One approach is to reject the idea of structure in objects, by treating each object as a complete unanalysed entity, entirely characterised by the universals in the language used to describe it. This, though, seems to fly in the face of obvious complex facts about objects. A second approach is to present the structure as a bundle of properties, with nothing further said about the structure which supports them. Since we normally attribute properties to a subject, a third approach suggests that there is a 'substratum', which has no distinct characteristics of its own, but plays the role of uniting the properties (like a pincushion whose only role is to contain pins). All of these views say little about structure, and focus on surface qualities and behaviour.

A more interesting view is the possibility that the substratum of an object is not 'bare', but has explanatory features required by any object. Since we cannot directly examine this more interesting substratum, it can only be inferred from what we know of objects. An obvious difficulty is that our concept of 'object' is rather loose. A pile of bricks can be treated as an object, but seems to have no more substratum than the separate bricks. If we believe that the world contains unified objects, the question needs to be approached via better examples, and a living entity such as a plant or a cat seems as unified as an object can get. The theory of 'hylomorphism' [formed matter] says that the substratum of such things not only supports and unites some properties, but also ensures that the entity persists through changes, such as growth or damage. The healing of a cat's wound suggests some inner guiding principle (to both ancient and modern biologists). This inner guide is the essential nature of the thing, largely shared with other things of the same kind (such as the family of cats). Modern biologists focus on chemical structures such as DNA, while earlier thinkers could only talk of inner laws, principles and structures, with no knowledge of the details.

The obvious problem with this metaphysical theory is that early thinkers knew too little biology, making their theory rather vague, and modern thinkers know too much, which reduces the 'essential nature' to more fundamental facts, such as chemistry and physics. Nevertheless, if we ask whether we 'understand' a cat, or a rose, or a car, we still focus on core structural features, and without that knowledge we do not have a good grasp of the topic.

An interesting approach to the structure of objects is to ask 'what they are made of'. The traditional answer to this was 'matter', about which (in the absence of chemistry and microscopes) very little could be said, apart from its potential to form objects. With modern knowledge, this is often a very revealing question, because we have detailed knowledge of the various materials that objects are made of. But is everything made of something? Modern science says 'yes' to this, all the way down to the smallest particles, and then hesitates. We know the properties of an electron or a quark, but what are they made of? Theories about fields and strings offer cautious answers, but it may no longer be the right question to ask.

If we ignore issues concerning fundamental physics, how important for an object is what it is made of (its 'constitution')? Is it the only significant aspect, or one vital aspect of the object's nature, or is it just important but optional? If there is nothing more to an object than its constitution, then we say that 'constitution is identity'. A piece of bread only has to be constituted by bread to be identical to a piece of bread. Of course, 'constituted' implies a togetherness about this bread, and scattered bread crumbs do not qualify as a 'piece'. Nevertheless, if you get some bread together, nothing more is required. The same will have to be said of a cat or a car, but those too can be seen as nothing more than what constitutes them, as long as they are 'together'.

Critics say that if a sweater is constituted by one long strand of wool, the strand is not identical to the sweater. A long strand and a long sweater are very different things. Thus the 'constitution view' says that an object (the sweater) and its constitution (the strand) are quite different, though they can entirely coincide. Between the views that constitution *is* the object, or that the constitution is quite distinct, comes the view that the constitution is indispensable. It is said that if we imagine a wooden table to be made of ice, it thereby becomes a quite different object. Critics reply that making it from a different piece of the same type of wood might still qualify it as the same object.

If we focus on the parts of an object, rather than the stuff it is made of, we are looking at its 'composition'. Just as with constitution, we can ask whether the parts that compose an object are identical to the object, or an indispensable aspect of it, or very important, or entirely optional. The system of formal mereology encourages the idea that an object just is its parts, so that any random collection of parts makes an object, and removal of one part destroys that object. A 'sum' or 'fusion' of parts is just thinking of them as a whole, even if they are scattered. At the other extreme, though, a machine may only need to retain its function to be the same object, making the actual parts unimportant. It is usually assumed that parts come first, and only constitute a whole when they are summed or fused, but the very concept of a 'part' implies a whole in which it participates, so we may wish to derive the structure from our grasp of the whole, rather than mentally coming at the whole by assembling its structure.

Many philosophers reject all this talk of forms, bundles, bare substrata, matter, constitution and composition, because it misses the way in which we actually think of the inner structure of whole objects. We usually view them as having a single character, giving rise to predictable behaviour, and capacities to function in certain ways. There has to be some interdependence between the parts, if it is a single object. There cannot be a precise theory here, because there are so many diverse examples, but standard physical objects are usually bound together, and their parts will have something in common. Once we have observed this unified character, we can then look for the matter, parts, durable features, and essential nature that we expect to find in the structure of a normal object.