

In (1991) and (2002) van Fraassen develops a sweepingly anti-metaphysical position on which all unobservable explanatory posits, including universals, propositions (see PROPOSITION, STATE OF AFFAIRS), propensities, essences, time slices, space-time points (see TIME), SUBSTANCES, POSSIBLE WORLDS, and mereological sums (see PART/WHOLE), are but linguistic conventions or optional interpretive instruments devoid of ontic standing. The observable phenomena are always variously theorizable, and theories are always variously interpretable. Theories underdetermine the choice of interpretation as data underdetermine the choice of theory. Accordingly, answers to metaphysical questions (see METAPHYSICS: DEFINITIONS AND DIVISIONS) are neither unique nor uniquely defensible. Philosophical enlightenment consists only in appreciation of the possibilities for interpretation.

Van Fraassen has made major philosophical contributions to probability theory, decision theory, foundations of physics, philosophical logic, and EMPIRICISM.

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van Inwagen, Peter (1942–) has contributed significantly to almost every area of research in contemporary metaphysics. Van Inwagen's influence as a teacher can be seen in the work of several generations of metaphysicians trained at Syracuse University (where he taught from 1971 to 1995) and the University of Notre Dame (where he is John Cardinal O'Hara Professor of Philosophy). He is a member of the American Academy of Arts and Sciences.

Van Inwagen's essays on modality, ontological commitment, and philosophical methodology have been influential. He also developed an original and widely discussed metaphysics of "creatures of fiction". But the two areas in which his work has had greatest impact are FREE WILL (see the extended essay) and mereology (see PART/WHOLE). (Since van Inwagen's conversion to Christianity in 1980, he has made many important contributions to the philosophy of religion. This article is concerned only with van Inwagen *qua* metaphysician.)

In 1975, he published a defense of *incompatibilism* – the thesis that free will and DETERMINISM are incompatible. At the time, many philosophers took it for granted that incompatibilism was untenable. Van Inwagen breathed new life into this venerable position.

In numerous papers and his book, *An Essay on Free Will*, van Inwagen develops several forms of what he calls "the Consequence Argument". They are more precise versions of a very intuitive idea:

If determinism is true, then our acts are the consequences of the laws of nature and events in the remote past. But it is not up to us what went on before we were born, and neither is it up to us what the laws of nature are. Therefore, the consequences of these things (including our present acts) are not up to us. (1983, 16)

Van Inwagen examines the "logic" of something's being "up to us". He discerns two principles at work in the informal argument quoted above, and he formulates them in terms of a sentential operator "N" (if "*p*" is a sentence expressing a proposition, then so is "*Np*"). Van Inwagen has given "*Np*" slightly different interpretations; the gloss he now favors is: "It is true that *p*, and there is nothing any of us could ever have done that even *might* have led to its being false" (2000, 9). One principle governing "N" is the "Necessity Rule": If it is a necessary truth that *p*, then *Np*. More controversial is van Inwagen's "Conditional Rule": If *Np* and *N*(if *p* then *q*), then *Nq*.

The intuitive reasoning behind the informal argument is spelled out as follows. If

determinism is true, then a sentence “*p*” describing the state of the world long before any humans existed, conjoined with a statement of the laws of nature, “*I*”, entails (as a matter of metaphysical necessity) a true description “*q*” of any subsequent human action one cares to consider. Given determinism, the following is, therefore, necessary: “if *p*, then if *I*, then *q*”. The Necessity Rule implies: “N(if *p*, then if *I*, then *q*)”. But surely the state of the universe long before humans is something that is paradigmatically not “up to us”, so “N*p*” is true; and therefore, by application of the Conditional Rule, “N(if *I*, then *q*)” is also true. Since there is nothing we could do that would affect the laws of nature, “N*I*” is true; and another application of the Conditional Rule yields the incompatibilist’s desired conclusion: “N*q*”. The supposition that determinism is true has led to the conclusion that human beings have never had a choice about anything they have done.

Even though, among philosophers taken as a whole, compatibilists probably still outnumber incompatibilists, the situation is very different from what it was in 1975. In responding to van Inwagen’s argument, compatibilists have displayed considerable disagreement over where it goes wrong; so compatibilism no longer presents a united front. Another change is that, among metaphysicians actually writing on the topic, there may now actually be more incompatibilists than compatibilists. Both changes are due largely to van Inwagen; he has come close to putting compatibilism “on the defensive”.

Since the late 1980s, a large proportion of work in metaphysics has concerned mereology (see PART/WHOLE). The proximal headwaters of this flood can be found in several of van Inwagen’s essays and his book, *Material Beings* (1990). His distinctive resolution of problems of parts and wholes is now one of the main positions discussed in a large and lively subfield of metaphysics.

A typical mereological puzzle is posed by the story of a cat, Tibbles, which loses the tip of its tail. Consider the part of pre-operative Tibbles consisting of all but the bit it will lose. This thing, “Tibbles-minus”, is not Tibbles,

since Tibbles still has all of its tail. What happens when the bit is removed? Does Tibbles become identical with Tibbles-minus? Impossible, given the necessity of IDENTITY – a simple consequence of the indiscernibility of identicals (a much more plausible principle than the IDENTITY OF INDISCERNIBLES). Do Tibbles and Tibbles-minus become two cats in the same place at the same time? Or did Tibbles-minus cease to exist, simply because of a change in its surroundings?

The doctrine of temporal parts (see TEMPORAL PARTS, STAGES) affords tidy solutions to this and many other mereological puzzles, while allowing the metaphysician to accept LEŚNIEWSKI’S mereology – arguably the simplest, most elegant mereological system. According to Leśniewski, whenever there are some things, there is also a whole with those things as parts – a whole that is no bigger than those things, taken together; i.e., something that has no parts entirely distinct from those things. But is Leśniewski’s principle true? Van Inwagen provides reason to think the doctrine of temporal parts requires David LEWIS’S counterpart-theoretic approach to essential properties – a result he finds unacceptable. He also argues that, without temporal parts, a metaphysician must give up Leśniewski’s principle or accept mereological essentialism – the radical view that nothing can really gain or lose parts. Best to give up the principle.

So not just any old assortment of things constitutes a larger whole. But then (what van Inwagen calls) “the Special Composition Question” (1990, 21–32) becomes pressing: What must one do to get some things to form a whole? Under what conditions will they do it? Van Inwagen’s criticisms of moderate answers – e.g., the view that things form a whole just in case they are stuck together, and none is stuck to any further thing – lead him to take “mereological nihilism” seriously: there are no wholes made of parts, only “simples”, physical versions of LEIBNIZ’S monads (see MONAD, MONADOLOGY).

Van Inwagen cannot believe that we are simple particles or monads. So there must

be an answer to the Special Composition Question that is less extreme than both Leśniewski's and the nihilist's, and that can accommodate physical objects like us. Van Inwagen's favored answer: some things form a larger whole if, and only if, they are engaged in the activities characteristic of a complete organism. In other words, every physical object is either a simple particle or a living thing. Cells are complete organisms, as are plants and animals – including human animals. But tables and planets are not; our talk of such things is just a way of saying that some particles are arranged “table-wise” and “planet-wise”.

Van Inwagen's organism-oriented metaphysics provides plausible answers to most of the traditional mereological puzzles. For example, although Tibbles is an organism, Tibbles-minus is not. So there is no such thing as Tibbles-minus – though there are some particles filling the region occupied by all of Tibbles except for the tip of its tail. With Tibbles-minus out of the picture, the puzzle is solved; Tibbles simply shrinks.

Van Inwagen's position is ingenious, original, and defensible. A few prominent metaphysicians (e.g., Trenton Merricks (2001) and Eric Olson (1997)) have adopted similar views. Others (e.g., Cian Dorr and Gideon Rosen (2003)) argue that van Inwagen's nihilism about inanimate objects can feasibly be extended to include all apparently complex physical objects: there are no such things, just swarms of simples filling regions of various shapes and sizes. One need not accept any of van Inwagen's positive doctrines to recognize that his handling of the Special Composition Question has cast the problems of mereology in a different light.

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verifiability *see* PRINCIPLE OF VERIFIABILITY

Vienna Circle *see* LOGICAL POSITIVISM

vitalism The doctrine of an autonomy of life. It was traditionally opposed to “mechanism”, the view that living things are nothing but complex machines. Strict vitalists such as Georg Ernest Stahl (1660–1734) maintained that every living organism contains an irreducibly non-physical element by which it is animated. ARISTOTLE called this element a “SOUL” (*psyche*). Hans Driesch (1867–1941) appealed to facts about morphology to support his vitalism. He claimed that if a newly fertilized egg were simply a physical system, it could not develop as it does. Hence, it must contain an “entelechy” that induces it to grow toward its ultimate form. Logical positivists (e.g., Hempel) cited this as an example of an unverifiable, and hence meaningless, view (*see* LOGICAL POSITIVISM; PRINCIPLE OF VERIFIABILITY). A more modest form of vitalism maintains that chemistry and physics alone cannot provide complete explanations of the distinctive behavior of living things. According to this view, biology is an autonomous science, since some biological laws are “ultimate” – they cannot be reduced to, or explained by, appeal to the laws of a more