

Leibniz's Monadology

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Note regarding citations: All citations come from the same text (listed in the references section), so I have found it more convenient to list citations by the section number of Leibniz's original works, where m is for *Monadology*, and d is for *Discourse on Metaphysics*.

Gottfried Leibniz was not well liked in his lifetime. For such an important person, only his secretary attended his funeral. (Baird, 2003) He is probably even less liked now, having caused untold confusion and frustration among college students who have been subjected to his writings. Here I will expound the high points of his *Monadology*, hopefully doing justice to such a fantastic metaphysical system.

In the physical universe, objects have parts, which in turn can also have parts, and yet there must be some smallest part out of which everything is made¹. These smallest parts are called monads (m1-2). Here we arrive at a seeming paradox, for Leibniz later states that "...any portion of matter is not only infinitely divisible...but also subdivided *ad infinitum*..." (m65). How can it be that matter can be infinitely subdivided, and yet still be composed of smallest parts, monads? It may help to recall that Leibniz discovered the Differential Calculus². To find the area of an object, one essentially divides it into an infinite number of "slices", and then adds up their areas to derive a finite sum, which is the area of the whole. This can be understood, in principle, by conceiving of the real number line on the interval from 0 to 1. This interval can be subdivided an infinite number of times, and yet each subdivision corresponds to a real number³. Thus the monads are infinitely small, thereby lacking shape or extension, and have no parts (m3).

Since monads have no parts, they cannot come into being nor be destroyed through any natural means; they can only be created or destroyed by God (m4-6).

Furthermore, having no parts, they cannot be *internally* altered by any other substance. There is nothing physical within them that can be "transposed", nor any moving parts that can be "excited, directed, or diminished", although such action *is* possible in composites. In this sense the monads are "windowless", in that no physical thing can go into or out of them (m7).

In nature no two objects seem to be exactly alike (e.g. snowflakes). Monads must therefore have *some* qualities, otherwise all physical things would be exactly the same, but Leibniz thought that no two monads could be exactly alike (m8-9). Furthermore, he assumes that all created beings are capable of change, and in fact are in a continuous state of flux (m10). It follows that internal or "natural" changes must result from some "internal principle" (m11). Monads must therefore have a "particular trait of what is changing" (m12). Although they have no parts, there must be a "plurality of affections and relations", since change is always a matter of degree (m13). These internal changes result in *perception*. This is a dim sort of perception that "must be clearly distinguished from apperception or consciousness" (m14). Consciousness then, is to apperceive ones perceptions (m16). The internal principle that results in changing perceptions is called appetite (m15). Appetite is a causal process of mental events, which is entirely separate from the physical world. It seems then that, although monads are made up of some sort of mental substance, and physical objects are composites of monads, the mental is entirely cut off from the physical (m81). One motivation for such parallelism results from the seeming explanatory gap that results when considering how physical events can give rise to mental events. This is best described by Leibniz's mill example:

Suppose that there be a machine, the structure of which produces thinking, feeling, and perceiving; imagine this machine enlarged but preserving the same proportions, so that you could enter it as if it were a mill. This being supposed, you might visit its inside; but what would you

observe there? Nothing but parts which push and move each other, and never anything that could explain perception. This explanation must therefore be sought in the simple substance, not in the composite, that is, in the machine (M17).

Here it will be best to explain the functioning of the physical world, and the first point to consider is that monads are only windowless in regard to *internal* changes, which says nothing regarding the movement of monads within the physical universe (m7). To Leibniz, the entire universe is packed full of monads (i.e. a plenum); there is no empty space. So, if one monad were to move, the monads in its path must move also, and this effect would propagate throughout the universe. Although the effect would diminish in relation to distance, it would affect all the monads, since "the total direction of matter is equally conserved" (m80). Since each individual monad is *externally* affected in this manner by all the other monads in the universe, if someone had sufficient understanding, the events of the entire universe could be determined by the motion of just one monad (m61-62). The movement of monads accounts for all causal relations in the physical universe, but this requires further explanation, so we will turn briefly to Leibniz's *Discourse on Metaphysics*.

For there to be a physical universe, there must be physical objects to which certain properties are predicated. However, as demonstrated by Descartes with a lump of wax, many properties are fleeting or illusory. So it was thought (by Descartes and others) that *extension* was the defining characteristic of *substance*. However, it turns out that these properties (i.e. "size, shape, and motion") are "imaginary and relative to our perceptions" (d12). Leibniz provides very little argument in support of this, so I shall provide two of my own examples⁴ to illustrate this point:

For an entire physical system, consisting of figures in geometric relation to one another, it is sufficient that the size of each and the distances between them can be

described by ratios. For we could make everything twice as large, or half as small, and these relations would remain. Subjectively, these ratios constitute the only means of measuring size and distance within such a system. Therefore, there is no objective measure of extension; there is no universal yardstick.

When a given number of objects are in motion, there is no objective *geometric* means for determining a frame of reference regarding this motion. The only way to construct a frame of reference is to understand the causes of such motion, and how these causes and the objects stand in relation to one another. Perhaps the best example is our own solar system. The Geocentric Model describes the motion of the celestial bodies in relation to the Earth, while the Heliocentric Model uses the Sun for a frame of reference. The preference for one over the other comes from an understanding of the laws of gravity and the simplicity of the Heliocentric Model. But in any case, one could construct a model that uses any given point in space for a frame of reference.

Since size is just a relation, and motion is relative to the frame of reference of an observer⁵, it must be concluded that what philosophers call extension is also relative. Thus extension cannot be attributed to simple substances (i.e. monads). Likewise, since physical causality consists entirely of motion (in Leibniz's Monadology), and motion is relative, the cause and effect relationship is relative also. These relative frames of reference correspond to the varying points of view and perceptions of the individual monads (m57). It follows that a cause and effect relationship between monads can only be attributed to monads *a priori* (m50). That is, since the physical universe is a plenum of monads, a causal relationship is determined by the perceptions of the monads involved. Since no monad can affect the internal state (i.e. perceptions) of another, the attribution

of cause and effect comes from God (m51). A good example of this can be found at the beach. The ocean water can be thought of as a plenum, and if you move under the surface, you will perceive a rippling of the water. You attribute this rippling effect to your *activity* because you have a *distinct* perception of the event, but from another perspective it could be said that the rippling of the water pushed you, in which case your perception of the event would be *confused* (m49, 52).

In such a physical system, the bodies of humans and animals are immensely complex automatons (m64). Such a *divine machine* consists of monads clustered about a single monad, which constitutes its soul (m63). Since mental events cannot cause the movement of monads, the movement of such an automaton must be accounted for by physical causality. Leibniz notes that "care has been taken to provide them with organs which collect several light rays or several air waves, to unite them and thereby give them greater effect" (m25). One may then wonder why Leibniz felt it necessary to separate the mental from the physical. There are two reasons why Leibniz proposed such a parallelistic system (m81). One reason, as stated above, is that it is not clear how the physical could give rise to the mental. The second can be found in his Discourse on Metaphysics:

...a reflection capable of reconciling the mechanical philosophy of the moderns with the circumspection of some intelligent well-intentioned people who fear quite reasonably that we are moving too far from immaterial beings to the disadvantage of piety (d18).

The correspondence between mental perceptions and the physical movement of monads (i.e. efficient causes) constitutes a perfect harmony in the universe, of which God is the architect (m56, 62, 79, 87). Everything is fine-tuned to result in the best possible world; this is what Leibniz refers to as *final causes*⁶ (m53, 87). Both systems, mental and physical, were set into motion by God, who continually sustains the monads through a

sort of emanation (d14). Although there is much, much more to Monadology, I have covered the high points of what is a truly marvelous metaphysical system.

Notes

- 1) Offered without argument.
- 2) Concurrently but independently of Sir Isaac Newton. Leibniz's notation is still used today.
- 3) Calculus is not even required for this process. It can be proven algebraically.
- 4) These are some of the arguments I have used against concrete materialism, in favor of my own system of modal realism.
- 5) As is Time, as proven by Albert Einstein.
- 6) Final causes are discussed at length in Leibniz's *Discourse on Metaphysics*.

References

Baird, Forrest E., Walter Kaufman 2003; *Philosophic Classics Volume III: Modern Philosophy*;
Prentice Hall, New Jersey.