

Form as Structure

Or Form as Stucturer?

Appeals to Structure

- Structure pops up unapologetically throughout works in biology and philosophy of mind.
- Jaworski (2014) cites the following examples as typical:
 - Biology:
 - Life is highly organized into a hierarchy of structural levels, with each level building on the levels below it. . . . Biological order exists at all levels. . . . [A]toms . . . are ordered into complex biological molecules. . . . [T]he molecules of life are arranged into minute structures called organelles, which are in turn the components of cells. Cells are [in turn] subunits of organisms. . . . The organism we recognize as an animal or plant is not a random collection of individual cells, but a multicellular cooperative. . . . Identifying biological organization at its many levels is fundamental to the study of life. . . . And an organism cannot fully explain a higher level of order by breaking it down into its parts.

—Campbell (1996)
 - Neuroscience:
 - [T]he organization of . . . components typically integrates them into an entity that has an identity of its own. . . . Organization itself is not something inherent in the parts. . . . In virtue of being organized systems, mechanisms do things beyond what their components do. . . . As a result, organized mechanisms become the focus of relatively autonomous disciplines. . . .

—Bechtel (2007)

Two Observations

- ✦ Structures in these examples are partly characterised by what structures (putatively) *do*.
- ✦ In each case, a structure is cited as something somehow 'over and above' the component parts it structures.
 - ✦ In brief, a structure emerges and 'confers powers'.

How?

- ✦ Some assumptions:
 - ✦ Basic beings have properties, construed sparsely and as distinct from predicates.
 - ✦ These properties are (= are identical with) powers.
 - ✦ Powers provide their bearers with dispositions, which may be manifested in a variety of ways, contingent upon their 'disposition partners'.

Four Basic Contentions

- ✦ Structures are powers.
 - ✦ Among the many powers a structure may be, one is of special moment: the individual-making power.
- ✦ Structures are particulars.
- ✦ Structures are directed.
 - ✦ Like other powers, they manifest themselves differently in different contexts of expression.
- ✦ Structures confer whatever powers they confer necessarily.

Structures are powers

- The theoretical roles that we expect individual-making structures to play, such as the role of conferring powers, are characteristic of properties in the ontology I have articulated. If structures are properties, then they have all the characteristics of properties described earlier. First, they must be powers—powers in particular to configure (organize, order, or arrange) materials. Each structured individual organizes or configures the materials that compose it. I configure the materials that compose me, and you configure the materials that compose you. Describing the way each of us configures our respective materials is something that hylomorphists say is an empirical undertaking—in our cases, an undertaking left largely to biology, biochemistry, neuroscience, and other biological subdisciplines. Collectively, these disciplines are likely to deliver long, complicated descriptions of cells, tissues, and organ systems, along with their characteristic activities, capacities, and interrelations. It will be convenient to have a term to stand in for these descriptions. Let us say that you and I configure materials humanwise, where ‘humanwise’ is a placeholder for the longer descriptions that it is the collective job of biologists, neuroscientists, and others to supply.

—Jaworksi (2014)

Powers are particulars

- ✦ Powers can stand in resemblance relations, but not in identity relations.
 - ✦ Your humanwise disposer is numerically distinct from my humanwise disposer.
- ✦ Our powers are not transferable. . . .
 - ✦ . . . any more than the redness of this red rubber ball could migrate and become the redness of those ruby lips.
- ✦ This is a matter of metaphysical necessity.

Powers have directions

- ‘Third, structures have the same directedness that all powers do. The structures of living things in particular appear to be directed toward developing and maintaining the organism’s mature state, as well as the powers that characterize that state and their manifestations. . . .’

—Jaworski (2014)

- Note here that the notion of ‘directed’ is crucially ambiguous.

Metaphysical Impossibility

- ✦ Structures confer their various powers as a matter of metaphysical necessity.
- ✦ This seems an unnecessary encumbrance, if powers are truly dispositions.
- ✦ It seems to embrace:
 - ✦ ϕ is a power of x *iff* necessarily, if x is in a suitable manifestation condition, then x manifests ϕ .
 - ✦ Yet powers might fink out.

Finking out

- Finkish dispositions are really just an instance of a broader problem with conditional analyses of counterfactuals (as, perhaps, with conditional analyses generally).
- Consider: x is disposed to ϕ in context C *iff* if x is in C , $x \phi$ s.
 - So, e.g., a crystal wine glass is disposed to shatter when dropped onto a concrete pavement.
 - Each time it is dropped, however, a crystal-loving angel (the fink), cushions the fall. Yet we want to say that the glass is fragile all the same.
 - Similar examples bring us into the realm of natural science.
 - So, an unhappy coupling: it is thus difficult to contend that forms both are dispositions *and* that they confer their powers as a matter of metaphysical necessity.

Remaining

- ✦ One needs an analysis of the precise nature of directedness, and, in particular, of the manner of norm involved, if any.
- ✦ One needs an account of the power-conferring proclivities of form.