

# Reduction, Levels of Reality, Etc.

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# The World as Layered

The logical empiricist conception of the unity of science:

Sociology

Psychology

Biology

Chemistry

Physics

Higher-level sciences were thought to “reduce” to lower-level sciences.

# Levels: Particulars

Higher-level particulars as composed of lower-level particulars:

Societies

Individuals

Cells

Chemical compounds

Atoms

**Substance dualism:** a person is composed of both a physical body and a nonphysical substance. **Physicalism:** a person is composed of a physical body only.

# Reduction: Properties

Higher-level properties can't be composed of lower-level properties. So what is the relationship?

Some possibilities:

- **Semantic:** words for higher-level properties are synonymous with expressions for lower-level properties.
- **Nomological:** laws involving higher-level properties can be deduced from laws involving lower-level properties (plus “bridge laws”)
- **Ontological:** higher-level properties are nothing over and above lower-level properties. How to make this precise? One answer: supervenience.

# Supervenience

## The Basic Idea:

B-properties supervene on A-properties if and only if:

For all  $x$  and  $y$ , if  $x$  and  $y$  have all the same A-properties, they *must* have all the same B-properties.

The term *must* suggests that this relationship is necessary rather than contingent. We could try to capture this by quantifying over possible worlds, but it avoids messy complications if we simply take  $x$  and  $y$  to range over not only actual objects but also merely possible objects.

Then we can remove the word *must*:

B-properties supervene on A-properties if and only if:

For all  $x$  and  $y$ , if  $x$  and  $y$  have all the same A-properties, they have all the same B-properties.

## Varieties of Supervenience: Local vs. Global

**Local:**  $x$  and  $y$  range over particulars within worlds.

**Global:**  $x$  and  $y$  range over entire possible worlds.

Being the tallest person in the room does not locally supervene on a person's physical properties, but it does globally supervene on physical properties.

## Supervenience: Two Uncontroversial Examples

**Life:** **A-properties:** which cells are “alive” or “dead” at a given moment. **B-properties:** which entities exist at that moment (e.g. gliders, eaters, blinkers, etc.). Similarly, **A-properties:** which cells are alive or dead over a number of “generations”; **B-properties:** what the entities are doing over that period (e.g. gliding in a northwest direction; consuming a glider; blinking on and off).

**Monitor:** **A-properties:** the R, G, B components of each pixel on the monitor; **B-properties:** the geometric shapes being displayed by the monitor.

## Varieties of Supervenience: Logical vs. Natural

**Logical:**  $x$  and  $y$  range over *any logically possible* particulars (local) or worlds (global)

**Natural:**  $x$  and  $y$  range over *naturally possible* worlds, i.e. worlds in which the actual laws of nature hold.

## Metaphysical Issues

**Time:** Does the A-series (present, past, future) supervene on the B-series (earlier, later)? Yes: Detensers. No, but it would need to in order to be respectable, therefore the distinction between present, past, and future is an illusion: McTaggart. No, so the present is something special and extra: tensers.

**God:** Do theological properties supervene on natural properties? Spinoza: Yes. Atheism: No, and so much the worse for theological properties! Traditional theism: No, and so much the worse for naturalism!

## Metaphysical Issues, continued

**Free Will:** Does our freedom or unfreedom supervene on our causal properties? Yes: soft determinism. No, and so much the worse for freedom: hard determinism. No, and so much the worse for determinism: **libertarianism**. (This description is pretty loose, but there may be an interesting characterization somewhere in the vicinity.)

**Mind:** Do mental properties supervene on physical properties? Yes: physicalism. No, so mental properties don't really exist: eliminativism. No, so mental properties are something irreducibly extra: property dualism.