Phil 317: [handout #12]
Kim: *Philosophy of Mind*
Chapter 9
Reductive and Nonreductive Physicalism

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§ The issue:
___ Between two realms of properties, what stands in between as their relation?

Mental Properties

Physical Properties

___ In general, what stands between higher-level properties and base-level properties?

(Sociology, anthropology, Economics ...)
↑
Macro Properties (Psychology)
↑
(Chemistry, Biology ...)
↑
Micro Properties (Micro-physics)

§ The debate between reductive physicalism and nonreductive physicalism:

[Ontological Physicalism]
___ The view that there are no concrete substances in the space-time world other than material particles and their aggregates.

[Nonreductive Physicalism]
___ The view that mental properties are *not* reducible to properties in fundamental physics, and that psychology is an autonomous science with its own distinctive vocabulary and methodology and not answerable to the methodological and explanatory constraints of fundamental physics.

[Reductive Physicalism]
___ The view that mental properties are reducible to physical properties, and that everything in the universe should in principle be explainable by laws of physics.

§ The Definition of 'Reduction'

[The Nagel model]:

1. Reduction is a relation between two scientific theories -- one is the target theory that is up for reduction; the other is the theory that serves as its reduction base.
2. The relation of reducibility is *logical derivability* : For T_2 to be reducible to T_1, the laws of T_2 must be derivable from laws of T_1.
3. For the laws of T_2 to be derivable from laws of T_1, there must exist some "bridge laws" connecting the vocabulary of T_2 with the vocabulary of T_1.

e.g.	T_2-law:	$Fx \rightarrow Gx$
	Bridge Laws:	$F \leftrightarrow F^*$ (F iff F*)
		$G \leftrightarrow G^*$ (G iff G*)
	T_1-law:	$F^*x \rightarrow G^*x$

4. If T_2 is derivable from T_1, then it is not independent of T_1 and is thus not an autonomous field.

Q: Does there exist such a reductive model between psychology and general physics?

[Note]:
___ For there to be a bridge law such as $F \leftrightarrow F^*$ (F iff F*), either F can be *defined over* F*, or between F and F*, there are empirically established *correlation laws* such that when something has F, it always has F*, and vice versa.
___ When there exists such bridge laws between F and F*, what it means is that the two sets of properties (F and F*) are *nomologically coextensive* (viz. they cover the same entities in a lawful way).

§ Advantages of Reduction

___ 1. [Ontological simplicity]: By reducing one theory to another, we reduce the number of independent assumptions about the world.
___ 2. [Explanatory simplicity]: It shows that fewer basic laws and fewer basic expressions fully suffice for the description and explanation of the phenomenon of a given domain.

§ Arguments against Mind-Body Reduction

1. [Argument from the unavailability of bridge laws]:
___ 1. In order for mental-physical reduction to hold, there must exist bridge laws between psychological theory and physical theories (physics, chemistry, biology).
___ 2. Having mental-physical bridge laws means that for each mental term or property, there has to be a nomologically necessary and sufficient condition in physical terms.
___ 3. Such a form of bridge laws does not exist between psychological terms and physical terms, or between psychological properties and physical properties.
___ 4. Therefore, there cannot be (either semantic or nomological) reduction between psychology and physics.

[Note 1]: semantic reduction vs. nomological reduction

____ Semantic reduction: establishing *definitions* between psychological terms and physical terms. [e.g. behaviorism]

____ Nomological reduction: establishing *empirically grounded correlation laws* between psychological properties and physical properties.

Q: Does either of the two possible forms of reduction exist between psychology and physics?

___ Davidson: No. → [Psychophysical anomalism]

[Note 2]: bridge laws and property identities

___ If we have reason to believe that for every psychological property or kind M a necessary and sufficient physical/biological property P exists -- that is, we have a bridge principle of the form "**M ↔ P**" -- these laws alone could motivate property identities of the form "**M = P**."

2. [Argument from multiple realizability]:

___ 1. For mental-physical reduction to hold, there has to be a nomological coextensive relation between a mental property and a physical base.

___ 2. But any mental property can have diverse physical realization in a wide variety of biological organisms. [Multiple realizability]

___ 3. Therefore, for any mental property, there cannot a physical property that is nomological coextensive with it.

___ 4. Therefore, there cannot be mental-physical reduction.

(1) Reductionist's Proposal: Disjunctive Identity

For any mental property, M, there could be an infinite list of its possible physical bases and M is identified with the list of disjunction of all these physical bases.

M = P_1 or P_2 or P_3 or ..... P_n (an open-ended list)

***[Nonreductionist's Rebuttal]:**

1. {P_1 or P_2 or P_3 or ..... P_n} is not a legitimate property of physics.

2. {P_1 or P_2 or P_3 or ..... P_n} cannot be dealt with by a single scientific theory.

3. {P_1 or P_2 or P_3 or ..... P_n} is not finitely characterizable, and thus the disjunctive identity cannot be accepted as a bridge law.

(2) Kim's Proposal: Local Reduction (Species-specific reduction)

Reduction or bridge laws can be done in a species-specific way. If P is a realizer of M in organisms of structures of type S, the following relationship holds as a matter of law:

S → (M ↔ P)

It is the task of human neurophysiology to discover and identify those neural states that realize psychological properties in humans. Such a reduction would tell us exactly how psychology is biologically implemented in human organisms.

§ Supervenience Physicalism

[SP 1]: Mental properties supervene on physical properties in that for every mental property M, if something has M, it has a physical property P such that necessarily if anything has P it has M.

[SP 2]: Mental properties supervene on physical properties in that if any x (in any possible world) and y (in any possible world) have the same physical properties (in their respective worlds), then x and y have the same mental properties (in those worlds).

[Note]:

___ The difference between [SP 1] and [SP 2] lies in the fact that [SP 2] deals with "cross-world" supervenience. But basically the two formulations are equivalent.

[Global Supervenience]: Mental properties globally supervene on physical properties in that worlds that are physically indiscernible are also psychologically indiscernible; in fact, physically indiscernible worlds are one and the same world.

___ Once you have fixed the total physical character of a world, its psychological character is fixed thereby; there is no further work you need to do or can do.

[Note]:

___ The difference between [SP] and [GS] lies in the fact that [SP] is falsified by the following scenario while [GS] allows for such a possibility:

There are two words, w_1 and w_2, and one mental property M, and one physical property, P. There are two individuals a and b in both worlds.
In w_1, a has {P & M} and b also has {P & M}.
In w_2, a has {P & ~ M} and b has {~P}.

Q: Which version of supervenience should nonreductive physicalists use to defend a nonreductive physicalist position?

§ The Problem of Mental Causation for Nonreductive Physicalism

The Problem for Nonreductive Physicalism:
1. Mental properties are real, genuine features of the world.

2. To be real is to have causal powers -- to have actual causal effects on the causal structure of the world.
3. But: causation is done only on the physical level.
4. Therefore, only physical properties have causal powers.
5. If mental properties are reducible to physical properties, then they can have causal power *parasitically* through physical properties.
6. But: nonreductive physicalists claim that mental properties are independent of physical properties.
7. This means that for nonreductive physicalists, mental properties have their independent causal powers.
8. Assigning independent causal powers to properties other than physical ones violates the principle of causal closure of the physical realm.
9. Conclusion: nonreductive physicalism cannot resolve the problem of mental causation.

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[Possible paper topic]:
___ Can nonreductive physicalism come up with a coherent explanation of how mental causation is possible in a totally physical world?