

Two Concepts of Intertheoretic Reduction – Thomas Nickles

- Nickles rejects the widespread view that reductions of scientific theories are all of one basic type
 - o 'special case T' does not mean simply "logical consequence of T"
- We need to recognize at least two main kinds of reduction:

1. Reduction1

- 1.1. Is the achievement of postulational and ontological economy and is obtained chiefly by derivational reduction.
- 1.2. This model is most helpful for understanding what I term "domain-combining" reductions.
- 1.3. Reductions of predecessor theories by their successors ("domain-preserving" reductions), on the other hand, normally do not achieve postulational and ontological consolidation, nor are they deductive explanations of the predecessor theories by their successors.

2. Reduction2

- 2.1. Involves a varied collection of intertheoretic relations rather than a single, distinctive logical or mathematical relation.

Two Concepts of Reduction

$$P = m v / \sqrt{1 - v^2/c^2}$$

Where m is rest mass, to the classical formula $p = m v$, in the limit as $v \rightarrow 0$

- It is quite clear that STR (special theory of relativity) equation reduces to the CM (classical mechanics) equation in the limit and the CM equation does not reduce to the STR equation.

Nagel on Reduction

- Nagel's distinction of "homogeneous" and "heterogeneous" reduction somewhat resembles my distinction of domain-preserving and domain-combining reductions and may have suggested it.

The electrical conductivity of a piece of metal is σ = the thermal conductivity of the metal is σT (x a constant)