Title: N-Correspondence **Section**: Epistemology and Philosophy of Science
Author: Ioannis Votsis **Affiliation**: University of Bristol

Few equations survive intact in the wake of scientific revolutions. It is well known that, more often than not, old equations reappear only as limiting cases of new equations, and, even then, with several provisos attached to them. Appeal to the correspondence principle has generated hope in fathoming the more unwieldy inter-theoretical relations and in resisting Kuhnian anti-cumulativist arguments. In this paper, I propose and defend a version of the correspondence principle that can account for some of the principal cases discussed in the literature and that is not trivially satisfiable.

According to Heinz Post's well-received formulation, the correspondence principle "is the requirement that any acceptable new theory L should account for its predecessor S by 'degenerating' into that theory under those conditions under which S has been well confirmed by tests" (1971: 228). Though Post's formulation captures the underlying intuition well, it is more of a guiding principle than a concrete proposal. The challenge then is to spell out in more detail the conditions of correspondence while taking care to avoid a trivialisation of the relation between old and new theories.

As recent work suggests, the correspondence principle is not a monolithic concept (see Hartmann (2002), and Radder (1991)). I would like to offer N-correspondence, not as an all-encompassing correspondence principle, but as a principle that: (a) bodes well with some central episodes in the history of science and (b) can fend off accusations of triviality. N-correspondence is defined thus: *An equation L′ reduces to, or approximates, a predecessor L when one parameter in L′ is neutralised*. The neutralisation of a parameter just means that the relevant equation, understood in set-theoretical terms as a set of ordered tuples, gets truncated from an *n*-tuple to an (*n*-1)-tuple so that the neutralised parameter is removed. Typically, the neutralisation process in equations involves one of either two things: (1) setting the parameter to zero (as, for example, in cases where the value of the parameter is to be added to some other values) or (2) setting the parameter to one (as, for example, in cases where the value of the parameter is to be multiplied by some other values).

That some old equations can be recovered whole or approximately whole simply by neutralising one of (often many) parameters of new equations cannot be dismissed as mere mathematical trickery. N-correspondence is quite difficult to meet. To test this, we can use a computer program that generates random pairs of equations. Because a great many different equations are possible, the odds of getting a pair that N-corresponds are very small. Indeed, without a computer's finite limitations the odds are next to nothing. This result holds even if we allow for the most liberal understanding of approximation acceptable in science.

References:

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