A Curve-Fitting Account of Ceteris Paribus-Laws

Kowalenko, Robert (2007) A Curve-Fitting Account of Ceteris Paribus-Laws. In *[2007] EPSA07: 1st Conference of the European Philosophy of Science Association (Madrid, 15-17 November, 2007)*.

Abstract

Law-like generalisations hedged with a ceteris paribus-clause such as widely in use in psychology, the social and biological sciences, are best construed as incomplete strict laws. These incomplete laws can be " fleshed out " by adding a set of enabling, or completing, conditions to their antecedent. In other words, the logical form of a cp-law, ceteris paribus ∀x (A -> B), is ∀x (A & CB -> B). The nature of CB must be subject to non-ad hoc constraints, however, failing which all putative ceteris paribus-generalisations will be trivially true. Two simple and plausible constraints are that: (i) A and CB be jointly sufficient for the consequent of the law, and (ii) the relevant completer also occur in the antecedents of other laws-in other words, that there be many other law-like generalisations of the form ∀x (D& CB -> E), ∀x (F & CB -> E), etc. Apparent counterexamples to this proposal can be disarmed by interpreting the epistemology of cp-laws as a curve-fitting problem, which consists in determining the relevant nomic regularity and plotting the correct curve over a very noisy data-set that contains large numbers of outliers and anomalies. The process of specifying the content of the ceteris paribus-clause that is hedging a law-candidate is in fact isomorphic with the process of determining which parts of one's data are outlying and anomalous, and which are part of the regularity. I submit that statistical theorems such as the Akaike Information Criterion (AIC) are instrumental in the latter process, and therefore also in the former. AIC states that a law-hypothesis which minimises both the number of adjustable parameters and error variance (i.e. a hypothesis that achieves an optimal balance between simplicity and adequacy to the data), displays the highest estimated accuracy of prediction of future data from the same distribution. I go on to discuss how AIC in combination with conditions (i) and (ii) illustrates the fundamental difference between a ceteris paribus-law and a statistical law, and how it yields the distinction between spurious and genuine hedged regularities that is necessary to make cp-laws " respectable ". Thus, I show how popular putative problem cases, such as " turtles live long lives " or " U.S. Supreme Court Justices are male " can be dealt with by the theory. Finally, I utilise work by Lange 2000; 2002 to deflect the criticism that cp-laws are, by their very nature incompletable, and hence indeterminate. I close by concluding that the account provides a very simple, powerful, and yet metaphysically conservative account of ceteris paribus-laws

Keywords:	ceteris paribus-laws curve fitting laws of nature special sciences
Subjects:	General Issues: Laws of Nature
Conferences and Volumes:	[2007] EPSA07: 1st Conference of the European Philosophy of Science Association (Madrid, 15-17 November, 2007)
ID Code:	3701
Deposited By:	Kowalenko, Robert
Deposited On:	07 December 2007

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