

Divine Action, Vatican Observatory, 1999; Kim's statement is in 'The Myth of Nonreductive Materialism', in *The Mind-Body Problem*, R. Warren and T. Szubka, eds., Blackwell, 1994.)

The judgment of 'unpersuasive' is an appropriate kind of criticism to level against the definition of a relatively new technical term. That is, knowledge of customary use fixes the definition of ordinary language, but in philosophy, definitions are offered as *proposals* for both the meaning and the use of a technical term. I have proposed that a supervenient property should be thought to be determined not only by subvenient properties but also by the circumstances in which the owner of those properties finds itself or herself. My proposal for a definition of 'supervenience' in fact depends on the success of explicating top-down or whole-part causation and of locating persuasive instances of it, because doing so will show that the supervenient property is (sometimes) dependent on those higher-level circumstances. So only time will tell whether my definition is of value.

I am grateful to the editors of this journal for the opportunity to provide this response, particularly so that I might disclaim any pretensions on my part to have solved these very difficult issues, either in *BLF* or in my subsequent writings.

Correspondence

Supervenience and causality – A medical response

Lindsay Cullen in his recent article¹ seems to question top-down causation. I think it is time it is recognized as an observed fact. Top-down causation is central to the science of psycho-somatics, but even in the simple examples the author himself cites, there is top-down causation. In gas laws the pressure is applied to the system from the outside, the volume as a whole changes and the temperature is raised or lowered again from the outside and to the system as a whole. Even the car engine example, while the correct movements of each component may be a necessary cause to keep the engine running, the reason the engine starts is because a person turns the ignition. Top-down action, along with the correct interactions of the component part, is the sufficient cause for the functioning engine. Indeed a person fashions and shapes the parts of an engine together and then applies energy from the outside.

1 Cullen L. 'Nancey Murphy, Supervenience and Causality'. *Science & Christian Belief* 13:39-50, 2001.

May I commend the seminal paper by Engel² on the biopsychosocial model of medicine for an elegant exposition of top-down as well as bottom up causation in the complex processes of dealing with a patient's death from a heart attack. Clinical medicine moves fitfully between the layers of complexity all the time, top-down to bottom up and vice versa.

The relation between the different layers is an intriguing one, and the concepts of supervenience, emergence, causality and predictability are often used. I regard Murphy's definition of a context for supervenience as a brilliant addition to the definition to date. This was well illustrated by my sister's recent visit to my niece and her new husband. As she approached their home she was shocked to hear a raging argument between them. When she timorously knocked, they pleasantly opened the door and announced that they had been rehearsing their parts for a drama production. That context changed her perception of the lover's tiff. For further examples shaping supervenience see Murphy's discussion of "Out"³.

I am not sure that we currently understand the relations between the layers, or that the concepts of emergence and supervenience are the best. I would add the one of meaning. An example would be Robert Boyd's famous analogy of the flashes from a distant torch being interpreted not just as a series of dots and dashes but as a Morse code message with a meaning. Even this however is not sufficient. How do the hormonal surges shape our mood and how does our mood shape our heart beat? There are complex interactions here, but the key neurobiological question, how can a property that emerges, control that from which it has emerged, is I think as yet unanswered. However to answer that question requires a clearer distinction between fact and philosophical speculation than Andrew Cullen allows.

Dr Alan Gijbbers is Consultant physician in Drug and Alcohol Studies and senior lecturer in Clinical Medicine, Department of Psychological Medicine, Monash University, Australia.

2 Engel G.L., The clinical application of the biopsychosocial model. *American Journal of Psychiatry*. 137:535-44, 1980.

3 Murphy N. *Anglo-American postmodernity: philosophical perspectives on science, religion and ethics*. Westview, Boulder Co. 23-6, 1997.