Emergence and Supervenience: A Reply to Philip Clayton

Gregory R. Peterson

ABSTRACT Keywords: Philip Clayton, Chuang Tzu, emergence, supervenience, closed and open systems. *Philip Clayton has put forth a clear and important position regarding the mind-body relationship in terms of supervenient and emergent realities. While I agree with Clayton on many points, I argue that there are important problems with current literature on supervenience and emergence. In particular, I distinguish between closed system emergence and open system emergence, suggesting that Clayton's position is closer to the latter than the former.*

I begin with a dialogue between the 4th century BCE Taoist philosopher, Chuang-tzu, and his friend, intellectual opponent and eminent logician, Hui Shih.

> Chuang-tzu and Hui Shih were strolling on the bridge above the Hao river. "Out swim the minnows, so free and easy," said Chuang-tzu. "That's how the fish are happy."
> "You are not a fish," replied Hui Shih. "How do you know that the fish are happy?"
> "You aren't me," said Chuang-tzu. "Whence do you know that I don't know the fish are happy?"
> "We'll grant that not being you, I don't know about you," said Hui Shih.
> "You'll grant that you are not a fish, and that completes the case that you don't know the fish are happy."
> "Let's go back to where we started," replies Chuang-tzu. "When you said 'Whence do you know that the fish are happy?', you asked me the question already knowing that I knew. I knew it from above the Hao river." (from Graham, p. 17).

I find this debate between Chuang-tzu and Hui Shih, occurring as it did some 2300 years ago, oddly relevant for discussion of Clayton's work. In its own way, the debate focuses on epistemology, and the two protagonists take quite different approaches as to how to even approach the question. Hui Shih, takes the scientific approach. He wants facts and theories that can be logically categorized and from which can be deduced clear and precise conclusions. Chuang-tzu, however, takes a different approach. In his final reply, he shows that he is not interested in the knowledge, but the implicit bounds within which such knowledge occurs. More on this later.

Philip Clayton has presented to us his views on emergence and supervenience, two concepts that have become central to his broader theological and philosophical project. In doing so, he has also attempted to show that some of the historical roots of modern emergence and supervenience theory run through the thought of Michael Polanyi, while at the same time attempting to show that Polanyian perspectives on emergence can be enriched by contemporary developments in the supervenience debates. While there are a number of points that might be pursued, I will quickly move to the issues that I consider central.

Clayton's position is essentially this. Polanyi's position on emergence: good! Polanyi's endorsement of dubious scientific theories that did not pan out: bad! Reductive physicalism, non-reductive physicalism, strong supervenience, token-token theories of mind-body relationship, and pretty much everything but a type-

type understanding of supervenience and emergence: bad! Epistemic emergence: Not enough! Full-blown, radical-kind, strongly emergent weak supervenience: really, really good!

I should note at the outset that there are a number of points that Clayton and I agree on. I largely concur with what Clayton has to say about Polanyi. I generally agree with Clayton's rejection of reductive physicalism as a metaphysical program and his general endorsement of emergence theories. On the characterization of supervenience and emergence, I start to worry some. As such, I offer the following observations.

Observation 1: I've come to regard most articles I read about supervenience theories as supremely unhelpful for the philosophy of mind and human nature: as far as I can tell, they have little relevance to how any theory of the relation of mind-body-brain would likely pan out. Clayton quite rightly criticizes token-token theories, most of which do not take into account issues of whole-part relations that would necessarily be central to any theory of mind. Too often, it is assumed that mental and physical properties are simple, discrete entities that can be easily and unproblematically correlated, as if the problem was no more complicated than currency exchange rates. But any single mental event involves thousands to millions of neurons, and it is not at all clear that this can be construed as a simple one-on-one relationship. I therefore concur with Clayton on his brief and sweeping characterization of what he calls strong supervenience, and I think he and others are correct in their estimation that strong supervenience theories are necessarily reductive in character.

Observation 2: Clayton speaks of weak and strong supervenience as well as weak and strong emergence. Clayton's analysis seems to imply a relation between the two. Strong supervenience correlates with weak emergence; weak supervenience correlates with strong emergence. In making these distinctions, Clayton is, I think, following the currents of discussion as they now stand. It is here, however, that the problems begin to emerge (or supervene?), for there are a range of possible meanings. Historically, the literature that advocates forms of strong emergence has been unclear on precisely what's being implied. A range of possibilities exist, and different forms are advocated by different authors.

For this reason, I have chosen a slightly different characterization that I hope more clearly brings out the issues involved. Rather than speaking of weak and strong emergence, I would rather speak of open and closed emergence (or perhaps emergent systems). A closed emergent system is one in which all the lower level physical parameters are known. It is thus not epistemologically emergent. Necessarily, then, a closed emergent system would obey known physical laws at the lowest levels, including the laws of thermodynamics. Closed emergent systems arise in situations where the lower levels organize themselves or are organized into complex interactive wholes that obey higher order laws and produce real and novel patterns. It is this whole-part relationship, combined with the development of higher order laws and novel higher order behavior that characterizes closed system emergence. It is important to note that many of the examples used to support a philosophy of emergence are of precisely this sort, such as Donald Campbell's soldier termites (1974). Nancey Murphy and George F. R. Ellis (1996) have used the desktop computer as an example of emergence, and in some ways the desktop computer is the example of closed system emergence par excellence, with clearly distinguishable levels of organization, from the physical elements to hardware organization to code to what appears on the screen. Presumably, closed system emergence allows ontological emergence of a radical kind. Whether it supports top-down causality is more complicated. I would suggest that it does, but Clayton might disagree. Certainly, closed system emergence has a price, inasmuch as it is relatively deterministic at the lowest levels, even if indeterministic at the higher levels.

In contrast to closed system emergence, systems that betray open system emergence are systems whose full workings are not known and which may rely on principles heretofore unknown. Open system emergence necessarily implies epistemic uncertainty. It may or may not imply ontological open-ness as well. Philosophers like John Searle (1992) and Colin McGinn (1991), for instance, can both be seen as advocates of open system emergence, but in both cases their claim is that our understanding of the mind-body relation is epistemically open (we currently and perhaps will never understand it) but ontologically closed, in the sense that they both believe that no new physical or super-physical properties are required to explain the relation. Roger Penrose's (1989) advocacy for a new theory of physics to explain the properties of mind is open in both senses, epistemologically because we currently don't understand the mind, and ontologically because new principles are called for. Most forms of substance dualism and panpsychism may be considered as radical forms of open system emergence. Not only do they call for new properties currently unknown, but new properties which seem at considerable variance with what we currently know about the world.

Observation 3: We might now ask, what kind of emergent supervenientist is Phil Clayton? Clearly, Clayton wants both ontological status and causal powers for the mind. One may argue that closed system emergence can give both. For many, this seems counterintuitive, for if the system is complete at the lower level, then that seems to imply there cannot be top-down causality. This is not necessarily the case, however, and it relies on a conceptual confusion that assumes that the ontological levels in a physical system are completely discrete. I would argue that this completely misunderstands the emergent character of many physical systems. If the mind is a closed emergent system, it is mind-ful by virtue of the organization of its physical constituents. One might say, borrowing Douglas Hofstadter's (1980) felicitous phrase, that closed emergent systems are not simply hierarchies, composed of independent levels, but tangled hierarchies, where levels are not completely discrete from one another. On this account, the mind is a physical system, but it is not merely a physical system, and we might say the same for the person as a whole.

While I am not sure, I suspect that Clayton would ultimately find this unpalatable. Elsewhere in his writings, he has argued that there can be mental causation without physical causation, something that would be impossible for a closed emergent system. If this is the case, when Clayton speaks of radical kind emergence, he is not simply speaking of new and novel properties that emerge out of the natural world as we understand it, but for new ontological categories altogether. The question then, is what kind of categories or things are we looking for? Once we open this door, it can open very wide very fast. Clayton shows some sympathy for theories that invoke quantum mechanics, but also acknowledges their limitations. Clayton is also quite strong in his rejection of substance dualism, although in his advocacy of mental causation without physical causation, he may be closer to it than he is willing to admit. Or, perhaps, because it is open, we cannot know at all. We must remain agnostic for now, and acknowledge that the human person is a multi-layered thing that can be approached at different phenomenological levels, while admitting ignorance as to how the levels connect.

Observation 4: All of this is very abstract. I tend to believe that philosophy works best when it can find concrete examples to mull over. So, I would pose three questions to Clayton as a way of helping him clear me up. First, can there be robot minds, a la Cog and Kismet (the current celebrities), and what would that imply? Second, both cockroaches and chimpanzees have brains, but do they have minds? And does the answer to this question tell us anything important? Third, are zombies possible? That is, is it possible to have intelligent behavior without that thing we call consciousness or subjectivity?

In fairness to Clayton, I'll reveal my short answers to these questions: chimpanzees, yes; robots, probably; cockroaches, probably not; zombies, I really doubt it. In saying this, I present my own feeling that the evidence on these questions remain difficult and the solutions less than clear-cut. In particular, I feel that there is a kind of dilemma most modern thinkers now face. On the one hand, there is good scientific evidence to believe that some form closed system emergence is the best way to go for understanding the mind-brain-body relation. Functionalist programs (speaking very broadly now) have been highly successful in the fields that compose the cognitive sciences, and promise to be so for decades to come. At the same time, there are good philosophical reasons to suppose that closed system emergence must be wrong, not least because it leads to implications for identity and personhood that are, from the first person perspective, both improbable and unpalatable. If Sophocles wrote about intellectual dilemmas rather than moral ones, he would, in my estimation, find a ripe subject here.

Concluding Observation: In truth, I felt much as Clayton did when asked to speak on this subject at a session of the Polanyi society. How forced will the connection to Polanyi be? Will I be limited to pleasant platitudes?

While I have certainly read Polanyi, I have never focused on his work, although I have always been appreciative of his emphasis on the tacit dimensions of thought, and indeed have become more so in recent years. It is with this in mind that I return to the dialogue between Chuang-tzu and Hui Shih. Like Hui Shih, I believe that we should take both scientific theories and philosophical constructs seriously, for the benefits of such effort are important in innumerable ways. Like Chuang-tzu, however, we must also take into account the boundaries within which such endeavors are pursued. Both scientific theories and more analytic oriented forms of philosophy aim for clarity, logical rigor, and completeness. At the same time, we can sometimes let our theories too easily drive our values, and when we turn to that most important of subjects, the human person, such drives can be dangerous indeed. It is perhaps this caution that tips me over into the camp of open emergence, impressed both by what we have achieved as well as by our own ignorance. And, by those boundaries within which our experiences occur. I suspect Polany might agree with that. At the very least, it may open our eyes to the false polarities and uncertain certainties that we sometimes are too eager to claim.

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Phil Mullins
Missouri Western State College
St. Joseph, Missouri 64507
Fax (816) 271-5680
Phone: (816)271-4386
E-mail: mullins@mwsc.edu

Walter Gulick
Montana State University, Billings
Billings, Montana 59101
Fax (406) 657-2187
Phone: (406) 657-2904
E-mail: WGulick@msubillings.edu