

# Dispositions: An Integrational Analysis

**Daihyun Chung**

Ewha Womans University, South Korea

Diogenes  
2015, Vol. 62(2) 32–40  
Copyright © ICPHS 2017  
Article reuse guidelines:  
sagepub.com/journals-permissions  
DOI: 10.1177/0392192117703047  
journals.sagepub.com/home/dio



## Abstract

Whereas the Humean accounts of causality in terms of contiguity, temporal priority, constant conjunction, and contingency face difficulties of one sort, the dispositional explanations of causality in terms of reciprocity, simultaneity, ubiquity, and holism seem to meet difficulties of another sort. But the difficulties which dispositionalism faces may be dissipated if one can appeal consistently to the logic of naturalism, rather than to the grammar of an implicit dualism, for example, as it is illustrated when G. Molnar tried to advance the analogy between the mental intentionality and the physical intentionality.

The notion of integration is taken to allow a conceptual space for naturalism of one kind. It may be expressed in the thesis that there is integrationality in any entity like dispositions, such that the integrationality is a power to realize the embedded objective of it in the context where it interacts with all others. The thesis would help to see how dispositions can be intentional, how the notion of information may be read integrationally from any object, and how the notion of fitting plays a role in the metaphysics of integrationality.

## I. The difficulties dispositionalism faces

What sort of difficulties are faced by Humean and dispositional accounts of causality? On the one hand, Humean accounts explain the relation of causality in terms of contiguity, temporal priority, constant conjunction, and contingency, denying any notion of modality in light of the fact that there is no experiential impression of necessity involved in causation. But this is not persuasive as it does not accord with ordinary intuitions. On the other hand, many dispositionalists interpret causality, not as a relation between objects or events, but as a relation between dispositional properties. Some go further and try to explain dispositional properties in terms of mutuality, contemporaneity, ubiquity, and holism. However, this sort of analysis is also counter-intuitive in a different dimension.

The difficulties that these dispositionalists face may be characterized in more concrete terms. Consider an ice cube's cooling of the lemonade and the lemonade's melting of the ice cube. Cooling and melting are manifestations of two powers, the "mutual" products of powers through interaction (Williams, 2010: 31). Two playing cards standing, leaning against each other to remain upright,

---

### Corresponding author:

Daihyun Chung, Ewha Womans University, Ssangyong 104-101 Poongdong, Goyangsi 411-757, South Korea.  
Email: chungdhn@ewha.ac.kr

constitute a case of causal “contemporaneity” (Molnar, 2003: 192–193; Martin, 2008: 185). One of the questions arising out of these cases is how the causality of mutuality and contemporaneity is possible. How can those various dispositional properties cooperate so as to produce a unified result of such complexity? This may be called “the problem of harmony.”

Another difficulty in the dispositional analysis of causality may be called “the problem of totality.” CB Martin (2008: 181) thinks that dispositional causality is “ubiquitous,” claiming that “the life of most honest dispositional states is spent mostly in the presence of other dispositional states whose manifestation is the prevention of those former states from having *their* manifestation. [...] It is a busy world.” All properties of things in the world, their dispositions, are related to each other in their manifestations as well as in their non-manifestations.

The problems of harmony and totality have been approached from at least three distinct perspectives. First Molnar (2003: 223), then Mumford and Anjum (2011: 193), propose an idea of primitive modality, which is not analyzable. Then, appealing to the notion of necessity obtained thereby, they judge that truth is a form of modal primitiveness, and that dispositional powers are truth-makers. This primitivism is supported by a situation in which any causal analysis would fail – either because the analysis does not presuppose a modal disposition and turns out to be vacuous or because the analysis contains a modal notion but is therefore circular. The strategy of primitive modality seems to push the problems of harmony and totality one step back to the level of necessity, but the problems do not go away. Heil (2010: 69–70) is willing to identify qualities and powers in order to have access to the notion of necessity. But as it stands, the identification attempt seems to require more explanation.

Second, Williams (2010: 96–97) examines how semantic holism may explain the issues of harmony and totality involved in dispositionalism. The meaning of a belief in an individual’s system depends on the meaning of all other beliefs in the system, and a change of one of her beliefs should affect the meanings of all her other beliefs. Likewise, the specific, determinate nature of each power depends on the specific, determinate nature of other powers with which it is arranged in a system of powers. This seems to be a promising start, although marred by an insufficient description of semantic holism. There must be something more, which would indicate how semantic holism itself works.

Third, Molnar (2003: 62–74) goes beyond F Brentano’s intentionality thesis and extends the notion of intentionality to the realm of physicals. He attempts to use the notion of intentionality to account for the role that dispositional properties play. The present paper pursues this suggestion in an attempt to assess its plausibility.

## 2. An integrationality thesis

A major claim in what follows is this: the intentionality of dispositions is the integrationality of those dispositions. An obvious merit of this hypothesis is that the notion of integrationality is rich enough to allow one to reject the traditional antithetic distinction between the mental and the physical while still acknowledging the complexity of the mental. The hypothesis may be expressed more precisely as follows:

Integrationality Thesis (IT): There is integrationality in any entity like dispositions, such that the integrationality is a power to realize its embedded objective in the context where it interacts with all others.<sup>1</sup>

What is it like to interpret intentionality in terms of integrationality? How can we understand the conceptual structure of the notion of integrationality so as to explain intentionality, which

applies generally to all entities including dispositions? One can make distinctions in the notion of integrationality between its third-person and first-person use. The third-person use of integrationality is seen as static;<sup>2</sup> the first-person use of integrationality is more active, taking elements of various systems (one's own –  $S_1$  – and those of others –  $S_2, S_3, \dots$ ) out into a new system where those various elements are put into integration, as is seen in the predicate grammar.<sup>3</sup> Of course, the integrator itself naturally tends to preserve its own system  $S_1$  intact. But through such a process of active integration, the entity goes through adaptation and growth. From the first-person point of view, integration is not a description of an objective state of affairs of an entity, but one's own involved activities. What we call "integrators" are ubiquitous, interacting with all other integrators. Descartes called this integrator "mind," limiting it to the mental power of humans only. But IT allows any integrator to have the power of a mind. If this hypothesis is plausible, then "mind" refers, not to the ability of a single kind of entity like a human mind, but to that of all entities of any degree of complexity, from an atom or cell to a human or the cosmos.

The difference between the two positions is obvious. Cartesians think that they can make sense of the distinction between thought and matter. In their view, it is possible to think that humans can exist without body but impossible to think that humans can exist without thinking; the body is contingent on the human, but thought is not. They apply this logic to other things to conclude that the human is a thinking being but other, non-human things are not. The result, of course, is dualism. But the Cartesian modal argument is flawed in that it is only in the actual world that an embodied person thinks. Is there any criterion of identity to distinguish between different incorporeal thinking beings? That is, if two distinct persons hold different views, one could distinguish between them in terms of their different mental contents. But if two persons have exactly the same thoughts, how can one distinguish between them? But IT entertains an organic view of the world, holding a thesis of continuity between humans and all other things and a thesis of integration that physical and mental dispositions are integrated with each other. Integrationality is a power of the human mind and body.

The continuity thesis is strengthened when evolutionary theory is presented as an option for the explanation of the origin of the species. Suppose that the theory is taken as a hypothesis. Then, one is forced to accept not only the evolution of our bodies but also that of our minds. We are in a position to see that human history is continuous with the histories of other entities: if evolution reflects a history of well-adapted species, then history represents an evolution of intelligent and just life-forms.

Evolutionary theory is optimistic in the sense that it was developed from the viewpoint of the survivors of that process. Certainly, there have been struggles and pains in the process of evolution. But the wholesome results of the evolutionary process in nature are such that survivors have become organically related with each other. When we come to see nature from this perspective, we cannot help but perceive an eventual harmony in it, perhaps a cosmic harmony. The notion of integrationality expresses such an internalistic optimism: the integrationality of an entity is realizing what can be the best in a given situation in which a subject is involved with its surroundings at the time.

The notion of integrationality does not exclude elements of conflicts; rather, it sometimes requires sharp changes or great earthquakes, freezing hatred or tragic wars, if necessary. And we know that care and compassion shorten the period it takes to reach the desirable stage of peace or harmony.

In the remainder of this article, I would like to offer three hypotheses that may add to the plausibility of IT: that intentionality is a modal element of dispositions; that information is integrational; and that fitting is a dispositional direction.

### 3. Intentional dispositions

Mumford and Anjum (2010) offer a threshold account for causation. They treat causes as dispositions toward effects, and prefer a threshold approach to a modal one. An effect occurs when its causes have accumulated to reach the requisite threshold. The threshold is here understood along the lines of causal powers, for they believe that causal powers are polygenic (interaction of multiple causes to a same effect) and pleiotropical (a single cause for multiple effects). Their notion of threshold makes it explicit that causal powers consist of the addition as well as the subtraction of powers. When a match is struck for a light, it is lit by the addition of the flammable tip, the striking in the right way, the presence of oxygen, and so on, as well as by the subtraction of facing the wind, excessive humidity, and other things of these sorts.

It is worthwhile to examine carefully how Mumford and Anjum argue for their threshold perspective. When they describe the workings of causal powers in detail, they do not allow one to ask further questions as to how those various powers cooperate with each other so harmoniously and holistically. They also criticize Molnar's notion of physical intentionality. Whereas Molnar believes that physical intentionality provides a means of understanding how causal powers work, Mumford and Anjum (2011: 186, 188) think that intentionality must not explain a disposition, and that it should instead be the other way around. They believe that the latter is a naturalistic way to go.

An important criticism of Molnar is revealed in the way in which Mumford and Anjum use the word "naturalistic." Their naturalism is not the naturalism into which Carnap tried to reduce dispositionality. Theirs is open enough to allow Molnar's naturalism to play a role, but they are not ready to accept Molnar's project to explain dispositions in terms of intentionality. It is clear that Mumford and Anjum think that it is naturalistic to explain intentionality in terms of dispositions while it is not naturalistic to account for dispositions in terms of intentionality. It appears that they presuppose a type of traditional dualism according to which intentionality is mental but dispositions are physical.

Mumford and Anjum went beyond Carnap's naturalism and are positive toward the relation between dispositions and intentionality, but they fail to face the issues of harmony and totality involved in dispositionalism. However, Molnar dares to explain causation in terms of dispositions in order to be inclusive of harmony and totality, thinking that intentionality is the mark of dispositions. He believes that intentionality allows a structure whereas dispositions have directedness, ubiquity, and totality.

Molnar demonstrates such a structure of totality in his suggestions that intentionality is the mark of a disposition, and that the directedness of dispositions to their manifestation is the directedness of intentional properties (see Molnar, 2003: 61, 81; Mumford and Anjum, 2011: 185). But what is the nature of the relations between dispositional properties, not only in their manifestations, but also in their non-manifestations? A similar question surfaces when Molnar (2003: 43) admits the difference between two intentionalities (of the mental and the physical) after he tries to extend the notion of intentionality of the mental so that the physical may have the power of intentionality as well. Why are Molnar's arguments for the total scheme of dispositionalism not working as he wants them to?

What exactly is the problem with Molnar's strategy? When Molnar proposes that intentionality is the mark of dispositions, his argument for that view is based on an analogy between mental and physical intentionality. He wants to show that just as the objects of mental intentionality may have the characteristics of being existent or non-existent, fuzzy, directed, or referentially opaque, so too does physical intentionality (Molnar, 2003: 63–66). But, as he admits, the analogy is vulnerable and should not be pushed too far (Molnar, 2003: 68).

The problem for Molnar lies not exactly with his arguments, but rather with the bottom-up strategy he adopts. Any bottom-up strategy on this kind of issue would seem to require that the traditional distinction between the mental and the physical is to be maintained. But unfortunately this implicit requirement is not in accord with Molnar's explicit aim to be free from the distinction. Thus, one alternative to Molnar's account of intentionality is to take a top-down strategy while holding on to Molnar's thesis that intentionality is the mark of dispositions.

How could the top-down approach be justified? Molnar's argument based on the analogy between the physical and the mental would suggest that his thesis that the intentionality is the mark of dispositions is only contingent. Yet, to make Molnar's thesis stronger, it must be shown to be necessary. One suggestion for this purpose is the following: define "disposition" to be a power of manifestation; suppose that dispositions are not intentional; then, a disposition should be either a mysterious power or a power manipulated by an external subject of some sort; but these options are not acceptable since these imply that the disposition could not execute its power in terms of what we can understand, which is contrary to the definition; therefore it is not possible that dispositions are not intentional; and so dispositions must be intentional. Intentionality is a modal element of a disposition, and a top-down approach may be acceptable.

#### 4. Integrational information

There are at least two versions of the informational view of the world. One is that everything humans see and experience is a text to be interpreted. This may be called an "epistemic version"; it derives from ideas related to the Kantian transcendental theory of knowledge. The epistemic version requires a Copernican revolution in that the object depends on the subject in a sense that the object is constituted by the subject's grammar. In this view, no object is allowed to have its own autonomous ways of interacting with other objects. The other version of the information view is that anything which exists in the world, whether it be a rock, a plant, a bird, etc., constitutes a system which interacts informationally with systems of other things.<sup>4</sup> A stone or a flower receives a variety of appropriate inputs from its surroundings and gives relevant outputs. This is a "processing version" that deserves attention, for I believe that this version offers insights as to how IT works.

Dretske (1988) ignores the ultimate difference between representations, artificial and natural. The former can be reduced to the latter which, he thinks, is basic. He is certain that human mental content is thus explained in naturalistic terms. This representation results from its dependence relationship<sup>5</sup> with the state of affairs in which it is found. This natural representation will be seen in human physiology, which is what he calls a "proto-belief." His dependence relationship is ultimately to be found in the conception of environmental information, which means that two systems  $a$  and  $b$  are coupled in such a way that  $F(a)$  is correlated to  $G(b)$ , thus carrying for the informative agent the information that  $b$  is  $G$  (Floridi, 2010).

Millikan's strategy (1993) is evolutionary rather than causalistic. She thinks that proper functions (and their teleology) of biological beings have been determined. That is, when we humans think in the way we do, what is involved in that thinking process is determined evolutionarily rather than in some mysterious way. For her, procedures to use representations are the same as ways to represent and to determine the representational contents.

Chalmers (1996) goes further than Dretske by suggesting some form of pan-psychism. Here rocks do not have a system of information processing and thus have neither consciousness nor experience. But when rocks are inflated or deflated due to the effect of high or low temperatures respectively,<sup>6</sup> they are in informational states which include a system of quasi-consciousness. These may not be phenomenal qualia but some proto-phenomenal qualia.

These three philosophers have distinct ways of formulating their own naturalism concerning mental content (Chung, 2001: 169–240). While their versions of naturalism are not yet fully articulated, they share the belief that human intentionality is not a criterion by which one could distinguish humans from other animals. They are evolutionists, to varying degrees, in explaining the issue of human intentionality in a wider context, which I would characterize in terms of integrationality.

Dretske's proto-belief, Millikan's proper function, and Chalmer's proto-phenomenal qualia were all offered in order to naturalize some human representations. If the naturalization programs sketched by these three philosophers are plausible, then what their programs presuppose will have been vindicated. Physical dispositions alone integrate these views.

## 5. Fitting as a dispositional direction

The notion of fitting appears to be a case in which the IT may be well expressed. Williams (2010: 84) seems to agree, for he thinks that dispositional powers must typically act in conjunction with one another to produce manifestations because they have the appropriate fit for one another. In his view, a harmonious manifestation through interactions of powers indicates a relation of fitting which displays reciprocity, intrinsicity, and essentialism (Williams, 2010: 89).

Williams does not give any detailed analysis of the notion of fitting, but the partial description he does give suggests that fitting may be a three-place predicate: P fits Q with respect of R. Convex (prominence, 凸) fits concave (depression, 凹) with respect of their surface structure. This interpretation of fitting is in accord with our ordinary experience and our intuitive understanding of it, but it does not offer much help in understanding the mystery of dispositions, for the interpretation of fitting as a three-place predicate, which Williams seems to favor, is a third-person rather than a first-person account of integration.

Fortunately, other philosophers have provided helpful suggestions toward a first-person account of fitting. Ludwig Wittgenstein, for instance, used "fitting" in various ways. Perhaps the most important element in his idea of fitting may be the idea that fitting is prior to use. For example, when we want to know the subject of a sentence we ask "who or what?" Wittgenstein (1958: §§137–139) suggests that the connection between the question and the subject as an answer is determined not by uses but by fitting. Goodman rejected the idea that fitting is a physical notion or a formal one. He opted instead for the view that fitting is a linguistic notion, which is working among components in a language (Goodman, 1978: 132, 138–140; Goodman and Elgin, 1988: 46, 158). Goldman (1986: 151–154) thinks that the world does not come to us as a precategorized whole. Though truth is non-epistemic, he believes that we construct a criterion of fitting so that we know, for example, whether the clothes we are wearing fit us. Human epistemic endeavor starts in a world not yet conceptualized but ends in the world readily conceptualized.

These three philosophers share something in common. The ideas of Wittgenstein's discovery, Goodman's human invention, and Goldman's human conceptualization suggest that fitting is a four-place predicate: P fits itself to Q with respect to R.<sup>7</sup> One can say that Professor Goldman fits himself to what his son bought at the store for his birthday the other day with respect to wearing. Likewise, the orange juice's cooling fits itself to the ice cube's melting with respect to temperature balance (and vice versa).

However, these three philosophers limited their notion of fitting to the level of human experience. One may take a wider notion of fitting from Williams and develop an integrational interpretation of the predicate. More specifically, one may look into the following three issues (one conceptual, the other two empirical) concerning how the integrational notion of fitting works concretely in the world.

First, note that the conception of property exemplification is puzzling. One may say “the property of being red is exemplified (instantiated, manifested) in this apple,” but who is the subject and who does the work of exemplification? The candidates for the subject are this apple, the property of being red, or some other mysterious external agent. Then is it not reasonable to suppose that the property of being red is disposed to such a manifestation? When the property of being red exemplifies itself, it does so in terms of fitting manifestation. Its manifestation should have some fitting grammar.

Second, let us ask how a primitive community could come to have its original language? Is it unreasonable to suppose that primitive languages may have emerged by the fitting of primitive expressions, which came out of people’s basic needs and desires in their concrete forms of life? Are not forms of life related to phenomena like obtaining food, shelter, clothing, recognizing others and being recognized by others, and communicating with one another? Engaging in a form of life is a business not only of one particular mode of describing what is “true,” but also of modes of totality; not only of intelligence, but also of wholesome relations. Those modes of total human experiences and relations are constructed within the structure of fitting, if not exclusively of truth.

Third, consider the recent advances in the biological sciences. Grice’s notion of natural meaning needs to be studied seriously, perhaps in such a way as to allow a closer connection between natural and non-natural meaning rather than insisting on an exclusive distinction between the two. The notion of fitting as a dispositional direction may make it possible to connect Grice’s two distinct meanings, allowing the two to share the same logic of fitting. Biological scientists talk about things such as the following: “the genetic coding for the amino acid sequences of protein molecules,” “the symmetry of the informational relationship between genotypes and phenotypes,” and “genetic programs such as programmed cell death.” How could a philosopher understand these expressions? If one takes these expressions as a case of Gricean natural meaning, there is no difficulty in understanding them. However, if one wants to maintain continuity between the two types of meaning, those expressions need to be explained in terms of descriptions of the biological states involved rather than in terms of an analogy between the natural and non-natural.<sup>8</sup>

The notion of fitting as a dispositional direction is one candidate to explain these expressions in terms of description. Once one allows those biologically dispositional properties to play the roles of fitting, the expressions may turn out to be descriptive rather than analogical.

\*\*

This paper began by contrasting Humean and dispositional accounts of causality. But as one can see now, the dispositional perspective is not exactly antithetical to the Humean account, for dispositionalism goes beyond Humean metaphysics. Dispositionalism tries to extend the notion of causality to have a wider and richer applicability. Toward this goal, it denies accepted notions of intentionality, the antithesis of mind and matter, standalone physical things, and so on.

I have tried in the foregoing to relate the views of various dispositionalists by offering the IT. My goal has been to provide a wholesome picture of some important notions in dispositionalism. If my view is plausible, then reality is an integrated whole, and physicalism and dualism are forms of absolutization of some aspect of the present reality. As traditional notions of causality and intentionality are in need of revision in the face of developments of new theories of empirical sciences, a new sort of naturalism emerges from the perspective of integration.

### Author Note

A draft of this paper was read at the Disposition and Mind Workshop, Kyung Hee University, May 30–31, 2012. Encouragement and help was given to improve the draft, and I am grateful for the participants in the workshop, especially Professors Kai-Yuan Cheng, Sungho Choi, John Heil, and John Michael McGuire.

## Funding

This work was supported by a grant from the National Research Foundation of Korea (NRF-2010-0589-2-5).

## Notes

1. My conception of integrationality is indebted to at least three sources. The first is the Confucian notion of cheng (誠) the character of which consists of two elements of 言 (language, logos, principle) and 成 (realization, accomplishment, success) (Chung, 2007). Secondly, Kwangse Lee suggested to me in one conversation that “cheng” may be translated as “integration.” The third is Seokheon Ham’s “metaphysics of seeds,” in which the notion of integration plays an important role: “The fundamental of all beliefs is the one that I and all others are one” (Kim, 2009: 17). Some scholars have understood the Confucian “cheng” as something other than integrationality, which is my proposal in this paper. For example, Legge (1971: 50–55) translated “cheng” into “sincerity,” which is ethical and human-centered rather than ontological and universal.
2. Its predicate form would be: “Integrated ( $e_1, e_2, \dots, e_n$ ).”
3. Its form would be: “Integrating ( $e_1, e_2, \dots, e_n$ )  $S_1, (f_1, f_2, \dots, f_n) S_2, S_3$ .”
4. The idea of “it from bit” indicates that all physical things are informational, responding to type yes-no type questions, see Wheeler, 1990.
5. The dependence relation between a representation and states of affairs is not the relation between tokens  $c$  and  $f$ , but between types C and F. Thus, an occurrence of token  $c$  indicates a token  $f$ , but this token indication is not necessary. The context may affect the indication relation, and misrepresentation is allowed.
6. Inflation: Fitting (rocks <sub>$t$</sub> , hot temperature, rocks <sub>$t+1$</sub> , size). Deflation: (rocks <sub>$t$</sub> , cool temperature, rocks <sub>$t+1$</sub> , size).
7. In other terms, fitting is a four-place predicate as in the following formula: Fitting ( $a_t, a_{t+1}, b, c_{\text{respects}}$ ).
8. One could note the citation for the Nobel Prize in Physiology or Medicine given to Watson, Crick and Wilkins in 1962 “for their discoveries concerning the molecular structure of nucleic acids and its significance for information transfer in living material” (Floridi, 2010: 76). But Floridi himself abides by the accepted distinction between natural and non-natural meanings, saying that the concept of biological information is more metaphorical than empirical (Floridi, 2010: 79–81).

## References

- Bird A (2012) Dispositional expressions. In G Russell and DG Fara (eds) *The Routledge Companion to Philosophy of Language*. London: Routledge, pp. 728–740.
- Chalmers D (1996) *The Conscious Mind*. Oxford: Oxford UP.
- Chen K-Y (2009) Semantic dispositionalism, idealization, and ceteris paribus clauses, *Minds and Machines*, 19(3): 407–419.
- Choi S (2009) The conditional analysis of dispositions and the intrinsic dispositions thesis, *Phil. and Phen. Research*, 78(3): 568–590.
- Chung D (1997) *맞음의 철학 – 진리와 의미를 위하여*. Seoul: Cheolhakgwa Hyeonsilsa.
- Chung D (2001) *심성내 용의 신체성*. Seoul: Acanet.
- Chung D (2007) Intentionality of Cheng (誠): toward an organic view, *Philosophy and Culture*, 2: 33–40.
- Clarke R (2010) Opposing powers, *Phi. St.*, 149(2): 153–160.
- Confucius (1971) *Analects, The Great Learning and The Doctrine of the Mean*, transl. by J Legge. Dover: Clarendon.
- Davidson D (1980) *Essays on Actions and Events*. Oxford: Clarendon.
- Dretske F (1988) *Explaining Behaviour: Reasons in a World of Causes*. Cambridge, MA: MIT Press.
- Floridi L, ed. (2004) *Philosophy of Computing and Information*. London: Blackwell.
- Floridi L (2010) *Information: A Very Short Introduction*. Oxford: Oxford UP.
- Goldman A (1986) *Epistemology and Cognition*. Cambridge, MA: Harvard University Press.
- Goodman N (1978) *Ways of Worldmaking*. Indianapolis, IN: Hackett.
- Goodman N and Elgin CZ (1988) *Reconceptions in Philosophy*. Indianapolis, IN: Hackett.



- Heil J (2010) Powerful qualities. In A Marmodoro (ed.) *The Metaphysics of Powers*. London: Routledge, pp. 58–72.
- Kim J (1966) On the psycho-physical identity theory, *American Philosophical Quarterly*, 3(3): 227–235.
- Kim S (2009) “함석헌과 씨알 철학의 이념,” *哲學研究*, 109: 1–27.
- Legge J (1893) Translator’s Prolegomena. In *The Chinese Classics, 1: Confucian Analects, the Great Learning, and the Doctrine of the Mean*. Oxford: Clarendon, pp. 50–55.
- Martin CB (2008) Power for realists. In JB Bacon, K Campbell and L Reinhardt (eds) *Ontology, Causality, and Mind: Essays in Honour of D. M. Armstrong*. Cambridge: CUP, pp. 175–185.
- Millikan RG (1993) *White Queen Psychology and Other Essays for Alice*. Cambridge, MA: MIT Press.
- Molnar G (2003) *Powers. A Study in Metaphysics*. Oxford: Oxford UP.
- Mumford S and Anjum RL (2010) A powerful theory of causation. In A Marmodoro (ed.) *The Metaphysics of Powers*. London: Routledge, pp. 143–159.
- Mumford S and Anjum, RL (2011) *Getting Causes from Powers*. Oxford: Oxford UP.
- Searle J and Perry J (1994) Intentionality. In S Guttenplan (ed.) *A Companion to the Philosophy of Mind*. London: Blackwell.
- Shannon CE (1998) *The Mathematical Theory of Communication* [1949]. Urbana: University of Illinois Press.
- Wheeler JA (1990) Information, physics, quantum: the search for links. In WH Zureck (ed.) *Complexity, Entropy, and the Physics of Information*. Redwood City, CA: Addison-Wesley, pp. 309–336.
- Williams NE (2010) Puzzling powers. the problem of fit. In A Marmodoro (ed.) *The Metaphysics of Powers*. London: Routledge, pp. 84–105.
- Wittgenstein L (1958) *Philosophical Investigation*. New York: Macmillan.