Integration is a metaphysical fundamental

What are the fundamental constituents of reality? While the ancient Greeks explained the world around them in terms of earth, air, water, fire, and ether, ancient philosophers in the Eastern Asian tradition understood reality in terms of yin-yang (陰陽), taiji (太極), and lichi (理氣). Although contemporary philosophers (e.g. Kim 1993; Putnam 1994; Penrose 1994) approach this classic metaphysical question primarily from the perspective of physicalism and/ or naturalism, what remains unclear on these approaches is the relationship between physical and mental phenomena, between electromagnetic force on the one hand and consciousness on the other. While most contemporary philosophers reject dualism—the idea that the physical and the mental are distinct metaphysical realms—they accept the distinction between electromagnetic force and consciousness. However, if dualism is fully to be rejected, an alternative metaphysical framework is needed for understanding reality holistically. Two of alternative frame works that may help to provide a holistic understanding are concepts of process (Whitehead 1929) and integration (Zisi 2014). In this article I explore the latter concept.

The notion of integration (誠) can be found in the *Zhongyong*, one of the key texts of Confucian philosophy. Many readers have understood the word "誠" of the *Zhongyong* to mean sincerity or faithfulness. However, while the concept does have certain anthropological or ethical connotations, its primary meaning is to be metaphysical. I interpret the *Zhongyong* to imply that integration is a metaphysical fundamental. In what follows I argue for the following three claims: that integration is essentially information consciousness (Section 1), that integration is a dispositional power (Section 2), and that information is ubiquitous (Section 3). Taken together, these three claims will support the main contention of this article—that integration is a metaphysical fundamental.

1. Integration is information consciousness

1.1 The character of integrational consciousness

Anderson (1981) identifies the following three functions for his integrational theory of information: the valuation function maps stimuli; the integration function adds and prioritizes the subjective values of information; and the response function translates internal impressions to external responses. For Anderson, human beings are the subjects of integration while external states of affairs are the objects of exclusively human integration.

To the extent that Anderson limits integrational information to human representation, he follows a Kantian model of representation. But some philosophers have extended integrational information from human to natural representations. For these philosophers, everything in the world is an information processor. Dretske (1988), for instance, believes that all things maintain their own proto-beliefs while they depend on environmental information. He holds that two systems a and b can fit to each other so that Fa and Fb can be correlated. Millikan (1993) introduces the notion of a proper function to a biological individual so that information processing is not mysterious but is rather determined biologically. And Chalmers (1996) believes that even rocks are in a proto-phenomenal state, or state of pseudo-consciousness, when they expand or extract.

I tend to reject both Kant's representationalism and Dretske's naturalization in favor of an integrational view of consciousness. In my view, consciousness is neither a subject of representation nor an object for naturalization; rather, consciousness <is> an integral state of things or an act of integration. In order to explain this view more fully, I will first discuss the notions of proto-consciousness and intentionality, showing how proto-consciousness can be attributed to inanimate things and how it can develop into person-consciousness. I will also clarify the relationship between the intentionality of human beings and that of natural beings. These concepts of proto-consciousness and intentionality will then be used to explain the sense in which the consciousness of information is a metaphysical fundamental.

1.2 Proto-consciousness

If the human body is a product of evolution, so too is the human mind. Evolutionary explanations can be given, not only for the basic bodily processes of digestion, excretion, and so on, but also for the operations of the mind, such as reflection, judgment, and belief-formation. But if the human mind has evolved, then there must be some hint of mentality not only in recent evolutionary history, but also in the much more distant ancestors of human beings. If this were not the case, then the human mind would have come about through some external intervention, which is incompatible with the theory of evolution. One is therefore led to accept a qualitative continuity between proto-minds (i.e. proto-consciousness) and human minds.

For the purposes of this article I define 'consciousness' as 'awareness from a first person perspective'. Accordingly, while different people may be aware of the same state of affairs, they cannot have the same consciousness. I assume that things as information processors are integrators, which enjoy proto-consciousness. But this is not to say that all things have proto-consciousness. It is important in this context to distinguish between the proto-consciousnesses

of panpsychism and that of integrationism. Panpsychism is a form of property dualism[1] that holds that proto-consciousness is distinct from physical properties and can, under the right conditions, blossom into the consciousness of human beings or what I will call 'person-consciousness'. However, integrationism rejects property dualism and insists, not that everything in reality <*has*> proto-consciousness, but rather that everything <*is*> proto-consciousness.

The evolution of the mind started with proto-consciousness, which is an information processor, and later developed into person-consciousness, which is a reflector. The difference between the two forms of consciousness can be understood in terms of their relative degrees of abstraction. Two arguments can be given in support of this point. The first argument attributes a first-person perspective to all information processors. In particular, since I am a human being, I have a first-person awareness of what it is like to be a human person, although the question of what it is like to be a bat does not fall within the scope of my first-person awareness. But while the first-person awareness in consciousness is of course limited to the occupier of consciousness this limitation cannot be used as a basis for denying a first-person perspective to other information processors.[2] The second argument in favor of the aforementioned point involves observing the degree of complexity of person-consciousness in the information processing found in human beings and then extending that observation to other kinds of information processors in the world. While proto-consciousness is a simple information processing state, person-consciousness consists of various states of informations. For example, an unpleasant feeling is person consciousness with layers of sub-conscious states interacting with each other, such as a default state that is systematically structured, an input state of initial information, a state involving the evaluation of the information against the structured system, a state consisting of the result of the evaluation, and a negative state which is interpreted as being unpleasant.

Recent scientific evidence, as reported by Kolata (2017), offers some support for this idea that proto-consciousness can be extended to all things. J. C. Hall, M. Rosbash, and M. W. Young isolated the gene that controls circadian rhythms in fruit flies and thereby advanced the understanding of the biological clock in human beings. Their discoveries indicate that the period gene encodes cellular proteins, which accumulate at night and disseminate during the day, controlling behavior like sleep, body temperature, metabolism, and hormone levels. When these researchers modified the period gene in fruit flies, the flies lost their circadian rhythm. These discoveries also help to explain how plants, animals, and humans have biological rhythms that are in sync with the rotation of the earth.

In seeing the scientific discovery of Hall et al. as an illustration of the fact that proto-consciousness can be extended to all things I am assuming that proto- consciousness does process informations

and, hence, that it is integrational. But this assumption seems to be a safe one since without it, the activities of the period gene in all organic agents are inexplicable miracles.

1.3 The modal intentionality of integration

What exactly is implied by the claim that integration is informational consciousness? Integration involves intentionality in the sense that integrational power is directed toward the harmony and totality of the phenomenal world. When things process informations in any given situation they have the properties of intentional consciousness. Things in the actual world are intentional, but they also have modal intentionality in the sense that they are intentional in all possible worlds. If they were not modally intentional, they could not be dispositional; nor could the harmony and integration of all things have been maintained in terms of the laws of nature. While there have been some attempts to explain the relation between dispositions and intentionality in terms of physical intentionality, none of these attempts has been entirely successful. For this reason I take an alternative approach, one that *identifies* dispositions and intentionality.

Mumford and Anjum (2011) tried to explain the harmony of the natural world in terms of intentionality and dispositionality. For them, causation is a disposition toward a result, and a result is obtained in the degree of integration of causes at a threshold. The relevant notion of threshold is clarified as follows: the causal power of any given event consists of the addition and subtraction of the various powers. When one strikes a match to light a fire, the fire is obtained by the addition of combustibles (the striking of the match with sufficient force, the presence of oxygen, etc.) and the absence of significant wind or moisture. They believe that the addition and subtraction of causal powers clarifies the notions of disposition and physical intentionality as well. They maintain a traditional dualism when they claim that intentionality is mental whereas dispositions are physical. Yet they go beyond the philosophy of Carnap when they allow for the possibility of some connection between the two.

Molnar (2003) attempts to strengthen the relation between intentionality and dispositions. He expands intentionality to the realm of the physical, insisting that intentionality is the mark of a disposition, and claims that while dispositions maintain directness, ubiquity and totality, intentionality provides structure. Molnar recognizes both the similarities and the differences between mental and physical intentionality. In mental intentionality, its objects may or may not exist, may or may not be ambiguous, and can even be referentially opaque. Molnar believes that physical intentionality shares these characteristics, although he does not deny or overlook the differences between the two forms of intentionality.

Molnar's attempt to connect intentionality with dispositions is novel but not entirely successful. Precisely because he maintains a distinction between the intentional and the physical, he cannot establish any necessary connection between the two even though he sees them as having many similarities.[3] One suggestion for overcoming this problem is to define 'disposition' as a power of manifestation and then claim that dispositions are not intentional. If so, then a disposition would be either some mysterious power or a power manipulated by an external subject of some sort. But this supposition is not acceptable since it would imply that a disposition could not execute its power, which is contrary to the definition. Therefore, one can conclude that dispositions must be intentional. Since intentionality is a modal element of a disposition, a top-down approach may be appropriate. Molnar's thesis, thus revised, is the claim that intentionality as a disposition is a metaphysical fundamental.

2. Integration is a dispositional power

2.1 Integration: the harmony and totality of causation

Suppose that integration at its initial stage is proto-consciousness. Does it then take place as an act or rather as a non-actional event? And does it come from something external or rather internal? I will now argue that integration itself is the power of integration. Consider first the fact that integration reveals itself as a type of fitting. To borrow an example from Williams (2010), imagine a glass of cool water with ice cubes in it and with the water melting the ice cubes. The relevant events (i.e. the cooling of the water and the melting of the ice cubes) are integrational events that fit each other; they are structured in terms of reciprocity, innateness, and essentialism. In this section I will argue that this causal structure realizes harmony and totality. If correct, this idea supports the view, which is based on the metaphysics of integration, that the agents of integration are integrators, executing integrational powers.

Among the many aspects of integration that are in need of explanation or elaboration, two that Martin (2008) focuses on are the possibility of reciprocal causation and the simultaneity of the various elements involved in events such as the cooling of the water and the melting of the ice. Explaining how various dispositional properties manage to combine into one wholesome totality is called 'the task of harmony'. If one accepts that dispositional causation is ubiquitous, then most dispositional states of affairs both help certain states to occur and restrain other states from occurring. The world of dispositional properties is therefore called a 'busy world'. Explaining how it works is known as 'the task of totality'.

A further challenge is to explain how the various individual things in this world are involved in this

harmony and totality. Two approaches are possible: one involving explanations of a general structure; the other involving explanations of active structure. General structure explanations, such as those provided by Molnar (2003) or Mumford and Anjum (2011), start with the assumption that integration is a primitive modality. Without this assumption causal analyses would be either empty or circular. Additionally, integration on this approach is understood by analogy to how semantic holism, as advocated by Williams (2010) and others, explains linguistic phenomena. Just as the meaning of any individual belief depends on the meanings of all other beliefs in the system, the power of a property in an individual thing depends on the powers of all other properties in the system. Third, as Molnar (2003) points out, Brentano's notion of intentionality can be expanded to include physical things, thereby structuring the roles that dispositional properties execute.

The foregoing explanation helps to clarify the general structure of integration. The integration of an individual object is a disposition of that object to adjust to its surrounding environment by forming relations with other objects and by deepening its structures. Even when the integration of an object is not manifested, the individual object is disposed to do so. Integration is a disposition to respond creatively in accordance with the embedded objective of an individual as it meets new situations.

2.2 Active explanations of integration: the integration theses

The active explanation of integration is an explanation of the autonomy of integration that sheds light on the power to bring about fitting, harmony, and totality, whereas the conceptual explanation of integration is a formal explanation of how individual objects may realize fitting, harmony, and totality. As I have argued elsewhere (e.g. Chung 2016), the active explanation involves the following five theses of integrational metaphysics, which are derived from the *Zhongyong*: (1) The integration of an individual object is a property of power which realizes its embedded objective in a context in which it interacts with all other individual objects; (2) 'mind' refers to a capacity of all individual objects that are able to process relevant information; (3) integration is a capacity, not only of human minds, but of all individual minds; (4) if our evolutionary history exemplifies the survival of the fittest, then that history also exhibits the evolution of both stronger intelligence and better justice; (5) integration is a property of realizing the ideal that any individual object seeks in a given situation.

It will now be shown that integration is active and agential. Traditionally, the concept of agency has been bundled up with the concepts of responsibility and thought, and hence limited to beings that are accountable (i.e. persons). This tradition also reflects a Cartesian dualism, according to

which there is discontinuity between mind (thought) and matter (that which is extended). On this view, it is conceptually possible for a person not to have a body but impossible for a person not to have a mind. However, few contemporary philosophers are willing to accept the discontinuity thesis of dualism, and it is indeed implausible to identify a person with pure thought. Of course, a human person consists of both a mind as well as a biological body, but it is important to note that a person's mind and body are connected with the minds and bodies of other persons and other integrators in the natural world in the sense that they influence and depend upon each other. Their connections are the result of each of them processing informations in accordance with their own embedded objectives.

What does it mean to say that individual objects realize their embedded objectives in particular situations? Let us consider this question with respect to human beings. Some of Chomsky's insights are helpful in answering this question. Descartes believed that even the most foolish human can learn how to speak a language whereas the most intelligent animal cannot and that the human capacity to learn language is due to the fact that humans have souls. However, for Chomsky, Cartesian dualism cannot explain how syntactic and semantic rules turn scribbles and sounds into meaningful sentences. Observing that a child's first seven years of exposure to language enable the child to master a language, Chomsky (1965) proposed that the human brain is equipped with an innate language-learning module, a language acquisition device.

By extending the thesis that individual objects realize their embedded objectives in particular situations to natural beings, one can overcome some of these Cartesian reservations. In particular, one may question the relevancy of the dualist's perspective that only humans can think, act, or be held responsible. One may also deny the alleged discontinuity of mind and body on the basis of which it is said that humans alone can think and act. Contemporary science suggests that, not only human beings, but all natural beings, are active agents of information processing.

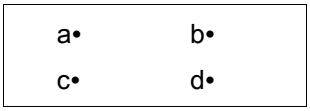
2.3 Integration is a power

In the previous section I advanced the idea that integrators are active agents. In this section I will argue that the relevant notion of integration is first-person, as opposed to third-person, agency. The integration of an individual object is the power to realize its embedded objective in the process of interacting with other objects. The structure of this integration might be understood as follows: an individual a and other individual b integrate into an individual c. However, problems arise with this third-person interpretation in which the unit of integration is taken to be the individual object. On the other hand, if integration has a first-person structure, then the units of integration may be presented as spatio-temporal states of individual objects: an individual object m, taking the first-

person perspective, integrates m's present state, S_1, and another individual n's present state, S_2, into m's next state, S_3.

Since I claim that an individual object is the first-person agent of integration, I assume the concept of a dispositional power, which has been defended by other philosophers. Kim (1993a) endorses causal powers as well as the following principle of property identity: if A and B are properties then A=B if and only if A and B make the same contribution to the causal powers of an actual or possible agent. Heil (2003) rejects the default view, advanced by Prior, Pargetter and Jackson (1982), that solubility or fragility are single properties, a view based on the understanding that categorical properties are basic while dispositional properties are higher-order properties. Instead, Heil proposes that solubility or fragility belong to a family of properties of realization. However, the powers of a property are not higher properties; rather, they are ordinary properties that should be investigated empirically.

Heil's view that dispositional properties are powers, much like ordinary properties, has evolved into the idea, defended by Harre and Madden (1975), that an object is a field of power rather than a spatio-temporal individual and also that the world is a network of powers rather than substances of interactions. On this view an individual object is reduced to a bundle of properties as well as to the powers of those properties, as represented by the following diagram from Holton (1999).



Suppose that a world consists of four points (a, b, c, and d) organized as follows: a is on the left of b and above of c; b is on the right of a and above of d; c is on the left of d and below of a; and d is on the right of c and below of b. Each point has its own proper relation with other points and the relationships among the four points shows nothing other than that the system is the network of pure powers. Points here have neither spatio-temporal extension nor location. The world too can be seen as a network of powers, which suggests that integration as a dispositional power is a metaphysical fundamental.

3. Information is ubiquitous

3.1 Pan-text: information is ubiquitous

Reality consists, not of monads or noumenal objects, but rather of informations. It is also a system that is calculated in terms of probable causality and governed by Einsteinian physics. Assuming

that informational physicality is sustainable, as Kuhlmann (2015) suggests, reality is better understood in terms of an integration theory than of a representational truth theory. While arguments in favor of informational physicality should appeal to proper physics, in this section I will offer other sorts of considerations in support of this view. I suggest that all things, including human thoughts, are texts of informational physicality and that ordinary language is therefore dependent on informational physicality.

Reality is a text for human beings because of its informational physicality. And while reality comes from informational physicality, the converse is not the case—informational physicality does not come from reality.[4] What humans see exists independently of human consciousness but at the same time it becomes the content of human perceptions. What one <sees> and what one <sees as> are not identical; rather, they share isomorphic structure. What one <sees> is informationally physical and guides what one <sees as> for each structure of information to coincide. This is the way how human perceptions are to be texts. Informations are ubiquitous.

Thoughts can have the content of informational physicality. In order to see how this is so, consider the distinction between narrow and wide content. Human thoughts, such as beliefs or decisions, are subjectively independent as well as communally constructive. For example, human decisions such as Barack's decision to propose to Michelle or Trump's decision to fire Comey carry narrow as well as wide mental content. These events reflect intra-personal as well as inter-personal relations with others. A decision, such as a proposal or a firing, is personal but also holistic in the sense of a having wide mental content that is constituted by the community of which the decision-maker is a part (Lee 1994, Kim 1996; Chung 2001).[5] Since the decision is holistic, the decision-makers' subjective mental content and the communally constructed mental content are both significant.

The ubiquity of ordinary language is another consideration in support of the idea that things are informational. Thus, while the beliefs associated with any given religion can conflict substantially with those of any other religion, ordinary language enables people of different religions to communicate with each other. In this sense ordinary language is what I have elsewhere called an intersectional system (Chung 2013). The informational physicalities of reality allow for intersectional systems like ordinary language through which the integration of various elements can be realized. In spite of the special characteristics of particular religions or other theoretical frameworks, the inter-sectionality of ordinary language makes the ubiquity of information possible.

3.2 The integration test

Information is not only ubiquitous but also integrational. If information were not integrational then there would be conflict at various levels. While this reductio argument in support of the integrationality of informations is straightforward, the idea itself should be pursued further. Though all things are integrational, there are various ways in which they are integrational. Since each object or event carries its own mark of integration, it should be possible to provide some criteria or tests for determining the way in which any bit of information is integrational.

To the hypothesis that any state of affairs *is* information, Choi et al. (1998) have proposed an alternative view that any state of affairs *can be* information, since a thermometer's graduation marks or a glass window's ice flowers are first encoded in order to be information. These physical representations are not propositions but rather marks to be encoded or interpreted. I believe that marks can be understood as syntactic structures. These syntactic units are open to various semantic interpretations. Syntactic units as non-cognitive processes can be turned into semantic units as cognitive processes (Rim 1999, Floridi 2010, and Floridi 2017). While physical marks are not themselves propositions prior to being interpreted they form a syntactic chain that enables information processing to produce an appropriate semantic interpretation.

Information is integrational to the extent that it is syntactic. Information is also integrational in that it consists of webs of properties of states of affairs, which can be understood in terms of dispositions. Property dispositions, physical or mental,[6] obey rules of information processing, and they are integrational as one property engages with other properties actively and positively. Such integration can yield something which is novel, while states of affairs are inter-connected. For example, the bricks of a house are separate units but their dispositional properties can be integrated into a brick house. The cold compression of an ice cube is not the result of the simple combination of various elements of the ice cube; it is rather a higher property resulting from the interactions of the properties of those elements. The hypothesis that information is ubiquitous is tantamount to the claim that all things are informational or that there is no thing that is not informational. Therefore, the hypothesis is empirical in nature. But it can also be tested by means of a thought experiment. Suppose that a given thing is not informational. Then there is no way that it can interact with anything else in the world, for it does not have a structure in which it can assume any role to play in this world. It would be either a thing that does not belong in this world or a thing that does not exist. Either way it would not be admissible in this world.

3.3 Location

I have argued that since information is ubiquitous, integration must also be ubiquitous. However, if integration were not ubiquitous, could information still be integrational? This question raises the

possibility that the ubiquity of information and the ubiquity of integration might be coincidental. Perhaps they arose simultaneously as opposed to one preceding the other, just as space and time are thought to coincide with the singularity of the Big Bang.[7] If so, the simultaneity of the integration of information and the ubiquity of integration may be another sort of singularity.

The ubiquity of integration also receives support from Whitehead's insight that each of all locations has its own aspects in all other locations (Whitehead 1925; 1929). Accepting the electromagnetic field of mathematical physics, Whitehead maintained that since all spatio-temporal locations are interconnected and reflect the inter-connected structure of the world, all spatio-temporal objects have spatio-temporal fields. Similarly, all bits of information may have their own aspects in all other bits of information. The content of all bits of information reflects the complex structure of the world, and the contents of these bits of informtion are, directly or indirectly, connected to each other. Thus, the contents of all bits of information have a field of semantic extension.

The analogy to Whitehead's insight on location may be extended even further. Whitehead introduced the notion of an actual occasion as a metaphysical primitive. An actual occasion is not what an enduring substance manifests in physical terms but is rather the process of becoming in the spatio-temporal fields in which all objects are located. The laws that condition these fields are the generality of activities of world fluctuations in which all events are instantiated (Whitehead 1920). Though Leibniz's monads are windowless, Whitehead's actual occasions are all windows; and though Kant's world is that of a transcendental subject, Whitehead's world is one in which mind and body or subject and object are organically intertwined. Whitehead's metaphysics of location is strongly analogous to the metaphysics of information. If a field of spatio-temporal extension is a field of semantic extension, an actual occasion is a semantic space. And if an actual occasion is a process of becoming, semantic space is a process of solidarity and a space of engagement. Finally, if a concrete thing in the physical world is instantiated as an event, then a concrete thing in the semantic world presents itself as an engagement of the event.

3.4 Degree

The claim that integration is a metaphysical fundamental raises many interesting puzzles, one of which, as I explain further below, concerns the semantics of the word 'one'. Our biologically inter-connected world, which is an object of one semantic grammar, is ontologically unifying. However, human history suggests that the world is in fact complex, chaotic, and even incoherent. How can the integration hypothesis be reconciled with the natural disasters and human calamities all around us? The answer to this question may be found in the notion of disintegration, which hides itself in the shadow of integration. When something disintegrates, extraneous things are removed,

often resulting in some sort of injury or suffering. But this suffering may turn out to be a stage toward higher, wholistic integration. In other words, disintegration may be an element that enhances the notion of integration by means of the elimination of miscellaneous accretions.[8]

What integration aims at is 'one', which may be either individual or collective. When it is not clarified, the 'one' of integration is ambiguous or vacuous. In a monistic ontology, this ambiguity should be understood as referring either to an individual or to the totality of all individuals. This possibility is supported by the idea that all objects are individuated, not by the principle of identity, but rather by fields of spatio-temporal extension based on the quantum field model. Spatio-temporal extension in the quantum field model does not separate individuals from the totality dualistically; rather, it allows them to have levels of dimensions or plural identities in accordance with the objectives of the inquiry at hand. The notion of an object in the quantum field model can be contrasted both with the Scholastic idea that individuals are primitive and irreducible and also with Leibniz's idea that the individuality of an individual is reducible to an essential property (Dorato and Morgant 2013).

On the one hand, integration is realized externally in accordance with the number of individuals involved. On the other hand, integration is instantiated internally in accordance with the scope of the integrity of an individual. The integrity or unity of an object may satisfy a minimal condition in order to maintain its individuality or may choose to satisfy the maximal condition in order to realize its own potential. Of course, the integrity or unity of an object is not determined by its essential properties; rather, it is constructed at a level of abstraction in the cosmos. Such an abstraction takes place as fluid connections or solidity in semantic fields and not as substances or their elements in traditional temporal space. Therefore, the units of abstraction in semantic fields present integration, not as a mechanstic calculus, but rather as probable and uncertain phenomena.

In the foregoing I have advanced the idea that integration is a metaphysical fundamental. If one accepts an evolutionary account of the human mind, then one should also accept the powers of the minds of physical things. In support of this idea I have argued for the following three claims: that integration is information consciousness, that integration is a dispositional power, and that if all things are bundles of information, then information is ubiquitous. The idea that integration is a metaphysical fundamental is plausible to the extent that these three claims are correct.[9]

References

Anderson, N. H. (1981). *Foundations of Information integration theory,* Academic Press.

Chalmers, D.J. (2010). *The Character of Consciousness*, New York: Oxford University Press.

Chalmers, D.J. (1996). *The Conscious Mind: In Search of a Fundamental Theory,* New York: Oxford University Press.

Choi, S., Lee, P. and Hong, Y. G. (1998). "A Humanistic Study of Life World of Information Society and Gestalt Change of Social Value Structure" (in Korean), Society of Philosophical Studies, ed., *Philosophical Studies,* 43 (Fall 1998): 395-443.

Chomsky, N. (1965). *Aspects of the Theory of Syntax.* MIT Press.

Chung, D. (2001). *Bodily Content of Mind: Externalism of Psychological Language* (in Korean). Seoul, Arcadia Press.

Chung, D. (2008). "Intentionality of Cheng (誠): Toward an Organic View", Korean Philosophical Association, ed., *Philosophy and Culture: Metaphysics*: 33-40.

Chung, D. (2013). "Theoretical Structure of Korean Discourses: Theoretical Pluralism and Discourse Pluralism" (in Korean), Hyongoo Kim, ed., *Korean Construction of Korean Science of Public Administration*, Bupmoonsa: pp. 53-74.

Chung, D. (2016). "Integrationality(誠): A Metaphysical Basis for the Concept of Causation", The Korean Society of Analytic Philosophy, ed., *Philosophical Analysis*, Vol. 17 No. 1(Spring 2016): 1-20. (CCPEA 2012, Teipei)

Dretske, F. (1988). *Explaining Behaviour: Reasons in a World of Causes*, MIT Press.

Floridi, L. (2010). *Information: A Very Short Introduction.* Oxford U. Press.

Floridi, L. (2017). "Semantic Conception of Information." *Stanford Encyclopedia of Philosophy.* Edward N. Zalta. ed., URL= <https://plato.stanford.edu/archives/spr2017/entries/information-semantic/>.

Harre, R and Madden, E.H. (1975). *Causal Powers: A Theory of Natural Necessity*. Oxford: Basil Blackwell.

Heil, J. (2003). *From an Ontological Point of View,* Oxford University Press,.

Holton, R. (1999). "Dispositions All the Way Round", *Analysis,* 59(1): 9-14.. .

Kim, Jaegwon (1993). "The Non-Reductivist's Troubles with Mental Causation", in Kim (1993). *Supervenience and Mind.* Cambridge University Press: 336-57.

Kim, Sun-Hie. (1996). *Self and Act* (in Korean), Seoul: Chulhakgwahyunsilsa Press.

Kolata, G. (2017). "Nobel Prize in Medicine Goes to 3 Americans for Body Clock Studies", *New York Times,* OCT. 2, 2017. <https://www.nytimes.com/2017/10/02 /health/nobel-prize-medicine.html?action=click&module=Latest&pgtype=Homepage>

Kuhlmann, M. (2015). "Quantum Field Theory", *The Stanford Encyclopedia of Philosophy* (Summer 2015 Edition), Edward N. Zalta (ed.), URL= <https://plato.stanford.edu/archives/sum2015/entries/quantum-field-theory/>.

Kurzweil, R. (2012). "Thought Experiments on the Mind." *How to Create a Mind.* Penguin Books: 199-247.

Kurzweil, R. (2007). *The Singularity is Near* (in Korean), trs. Myungnam Kim & Sihyung Chang, Seoul: Kimyoungsa Press.

Lee, J.H. (1994). “Causal Powers of Mental State and Non-Individualism (in Korean), Korean Philosophical Association, ed., *Philosophy*, 41: 156-178.

Marmodoro, A. (2010). *The Metaphysics of Powers,* Routledge.

Martin, C.B. (2008). "Power for Realists", *Ontology, Causality, and Mind: Essays in Honour of D. M. Armstrong*, ed. J. B. Bacon, K. Campbell, and L. Reinhardt, Cambridge University Press, 2008(1993): 175-185.

Mauro Dorato & Matteo Morgant (2013). “Grades of individuality: A Pluralistic view of identity in quantum mechanics and in the sciences”, *Philosophical Studies*; 163-1: 591-610.

Millikan, R.G. (1993). *White Queen Psychology and Other Essays for Alice,* MIT Press.

Molnar, G. (2003). "Directedness", *Powers-A Study in Metaphysics*, Oxford U.P.: 62-74.

Mumford, S. & Anjum, R. L. (2011). *Getting Causes from Powers*, Oxford U. Press.

Nagel, Thomas (1974), "What is it like to be a bat?", *The Philosophical Review,* 83-4: 435–450.

Nagel, T. (1986). *The View from Nowhere,* New York: Oxford University Press.

Penrose, R. (1994). *Shadows of the Mind- A Search for the Missing Science of Consciousness.* New York: Oxford University Press.

Prior, E. W., Pargetter, R. and Jackson, F. (1982). “Three Theses about Dispositions”, *American Philosophical Quarterly,* 19: 251-7.

Putnam, H. (1994) “The Best of All Possible Brains? - *Shadows of the Mind* by R. Penrose”, *The New York Times on the Web,* November 20, 1994, Sunday, Late Edition.

Rim, I.H. (1999). “Cognitive Concepts of Information and Knowledge” (in Korean), Society of Philosophical Studies, ed., *Philosophical Analysis of Informational Society*, Seoul: ChulhakgwaHyunsilsa: 37-72;

Whitehead, A.N. (1929). *Process and Reality-An Essay in Cosmology.* Cambridge UK: Cambridge University Press.

Whitehead, A.N. (1920). *The Concept of Nature*, Cambridge University Press.

Whitehead, A.N. (1925). *Science and the Modern World*, New York: Macmillan.

Williams, N.E. (2010). "Puzzling Powers-The Problem of Fit", in Marmodoro (2010): 84-105.

Zisi (2014), *Zhongyong* (*The Doctrine of the Mean* 『中庸』), tr. James Legge, The University of Adelaide, eBooks@Adelaide: <https://ebooks.adelaide.edu.au/c/confucius/c748d/>.

[1] Chalmers (1996) understands the psychological concept of the mind in terms of the causal or explanatory roles it plays in human action, the phenomenal concept of the mind in the ways the mind feels, and consciousness as a subjective character of human experiences. My knowledge of consciousness comes from my own case, not from any external observations. On this view, the position of eliminativism is implausible, as there is an asymmetry between our knowledge of consciousness and our knowledge of

anything else.

[2] The famous Bat Argument introduced by Nagel (1974; 1986) runs something like this. Suppose that all possible knowledge about the physical facts of bats is known. But the statement that bats are conscious as well as its negation are both compatible with that supposition. Thus, the supposition could not explain the first-person experience of bats. Nagel is willing to accept the hypothesis that all organisms may undergo mental experiences which we human beings cannot understand from our first-person perspective.

[3] Molnar's thesis is contingent because it is based merely on the fact that there is an analogy between the physical and the mental. But one cannot achieve the intentionality of the physical through this contingent thesis. If physical intentionality is a matter of necessity, not contigency, then the physical must be identical with the mental or else physical intentionality must be conceptually primitive.

[4] The world should be seen, not as a totality of individual objects, but rather as structures of information from top to bottom. Bits of informations are the ultimate ontological entities. If reality and information truly coincide then the Cartesian separation of mind and body cannot be maintained, and information does not reside in some Platonic third world. In the past, one could reach information through mathematics and physics, but recently matter is said to be approachable through information: A bit is not obtained from an it; rather, an it is obtained from a bit.

[5] Lee (1994) observed that the distinction between narrow and wide content is not a strict one, and many cases do not seem to admit this distinction at all. Depression, for instance, leans toward the narrow content and may be related to a lack of proper inter-personal content. And the notion of wide content may be subdivided further into inter-personal content and inter-agentic content. This subdivision may be needed for the sake of the integration of everyday life.

[6] The words 'physical' and 'mental' should not be understood in the dualistic tradition.

[7] Chalmers (2010) interprets the 'singularity' as the critical point of an intelligence explosion in which artificial intelligence surpasses human intelligence. Kurzweil (2007) observes that the rate of technological progress doubles every ten years and that this progress will continue until the critical point of the singularity. As the singularity of the Big Bang is the critical point from which the notions of space and time derive their meaning, the singularity of artificial intelligence may be understood as the critical point at which the extension of 'human beings' is no longer confined to the natural human species.

[8] The pain and suffering caused by disintegration is an issue that deserves further examination.

[9] This draft was prepared to read at two sessions, one for CCPEA (Conference on Contemporary Philosophy in East Asia) August 9-11, 2018 in Taipei, Taiwan, and another one for WCP (World Congress of Philosophy) August 13-20 in Beijing, China.

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