

Chapter 1

Foregrounding the Background: Cognitive Science as the Study of Embodied Context

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In contemporary cognitive science, *context* is implicitly conceptualized as the constellation of background factors against which an object or event is treated as foreground. This approach to context is due to our ontological commitments to *realism* and its assertion that reality exists, as it does, independently of observers. The present chapter proposes that realism is an insufficient ontological starting point for cognitive science because it leads one to potentially accept the distinction between relative properties (e.g., weight) and intrinsic (e.g., mass) properties. Many contemporary physicists and philosophers criticize this view because of its implicit assertion that intrinsic properties exist in a manner that is completely independent of context. Interestingly, alternatives to intrinsic properties often seem very much like the notion of ‘internal relations’ espoused by late 19th- and early 20th century idealist philosophers. Wild Systems theory (WST) (Jordan, 2013) is presented as a framework for cognitive science that is consistent with such a thoroughly relational views of reality. Specifically, WST conceptualizes organisms as embodiments of context that are thoroughly, relationally embedded within the contexts they embody. Within WST, context is foregrounded instead of being treated as background, as cognitive science becomes the study of embodied contexts.

1. Introduction

In contemporary cognitive science, *context* is often conceptualized as the infinite constellation of background events within which an ‘object’ or ‘event’ is able to emerge as foreground. Though perhaps never stated in quite this way, such an approach to context is implicit, if not explicit in the *ceteris paribus* thinking that underlies our approach to experimental design and our assertion that certain ‘factors’ and ‘variables’ need to be ‘held constant’ so that one might reveal the context-independent properties of a phenomenon. In short, “holding other things constant,” or “all things being equal,” a given system will behave in a predicted fashion. And because of this predictable behavior, the phenomenon is said to be ‘known.’

Recently, Jordan and Day [2015] proposed that as the pragmatic success of the above-mentioned approach to science and context has increased over the past few centuries, the success has afforded the emergence of ontologies that generate metaphysical burdens the actual practice of science is unable to bear, and cannot hope to sustain. Specifically, these ontologies tend to entail the implicit, of not explicit assertion that while certain properties such as weight are *context dependent* in that they garner their status as properties in relation to a particular context (e.g., gravity in the case of weight), certain other properties such as mass are not context dependent [i.e., they are assumed to be *context independent*] in that their status as a property appears to be intrinsic; that is, the property does not seem to depend on its context. Jordan and Day [2015] assert it is this assumed distinction between context-dependent and context-independent properties that leads these ontologies to place unnecessary ontological burdens on the practice of science in general, and cognitive science specifically, that, in the end, threaten our ability to speak coherently on this issues of reality, meaning, and truth. In what follows we describe these ontologies and then briefly describe a recently developed approach to cognitive science (i.e., Wild Systems Theory—WST) that avoids such unnecessary ontological burdens while simultaneously affording a coherent means of addressing reality, meaning, and truth. At the core of WST is the assertion there exists no such thing as context-independent properties. As a result, the

concept of context will be foregrounded in that all of reality will be seen as constituting context for all of reality.

2. Ontology and Context Independence

According to Jordan and Day [2015], lying at the core of contemporary cognitive science is an implicit (or explicit) commitment to *realism*; the assertion that what is important about reality is its independence of an observer. Once one has accepted *realism*, epistemology becomes the dominant question in cognitive science as researchers attempt to discover the lawful connections between observer-independent reality and observers (i.e., between the objective and the subjective).

The two dominant varieties of realism are indirect- and direct realism. Indirect realism is the belief that our knowledge of reality is mediated by our sensory systems and knowledge structures. Contemporary indirect realism tends to be presented as an evolutionarily inspired version of Locke's [1700] mediated theory of perception in which external events 'cause' the internal formation of impressions and ideas. Despite the many varieties of indirect realism [Fodor, 1983; Pinker, 1999], most contemporary versions are espoused by those who assert a computationalist, representationalist view of cognition in which knowledge is equated with the representations that external events 'cause' within our brains.

Direct realism on the other hand, develops its ontology as a refutation of indirect-realism, and does so basically as a recapitulation of Hume's [1738] critique of Locke's mediated theory of perception. That is, cognitive scientists as far back as the Six Realists [Holt *et al.*, 1910] have argued against indirect realism because they believed, as did Hume, it logically denied one access to external reality. Specifically, common to Hume and direct realists is the assertion that if one posits our access to external reality is mediated by internal representations, then all we can ever have access to is internal representations.

Indirect realists tend to believe that indirect-realism is able to bypass Hume's radical skeptic critique of mediated theories of perception because of evolution. That is, they believe that since our brains co-

evolved with our bodies and the world, the representations they provide, though perhaps not completely “accurate” in the psychophysical sense, are nonetheless functionally sufficient because of their ability to help us generate survival-generating action. This belief has been bolstered over the past decades by findings such as Hubel and Wiesel’s [1962] discovery of neurons in the primary visual cortex (V1) whose receptive fields seemed to correspond directly to specific locations in the external environment. The later discovery of other neural systems containing spatially correspondent receptive fields, coupled with Milner and Goodale’s [1995] discovery of neural systems involved in vision for perception versus vision for action, further bolstered indirect-realism because it seemed to demonstrate the means by which internal representations of external events are able to accurately ‘guide’ actions back onto external reality.

Jordan and Day [2015] assert however, that even if we run empirical studies to validate the existence of external reality, and even if these experiments yield reliable, replicable results, our ‘knowledge’ of the results and, therefore, external reality, will forever be mediated by our internal representations. The point is, indirect-realism logically denies itself access to external reality because of its initial ontological assumption that reality exists outside of observers, and needs to be mediated by processes within the observer in order for the observer to have access to it. This logical flaw in indirect realism (and any mediated theory of perception, for that matter) is what denies the indirect realist access to reality, not reality itself.

Instead of asserting that the ‘connections’ between the internal and the external are mediated by representations of the external, the direct realists conceptualized such connections in terms of evolutionarily derived ‘relations’ between the organism and the environment. This idea can be traced at least as far back as William James, as well as the Gestalt psychologist Kurt Koffka [Ash, 1995], and received its most influential expression by J. J. Gibson [1979] who argued that organisms perceive the world in terms of behavioral possibilities, what Gibson referred to as affordances.

2.1. *The problem of relational versus intrinsic properties*

While direct realism's reliance on evolutionarily-derived 'relations' seems to avoid the radical skepticism inherent to indirect-realism, Jordan and Day [2015] argue its use of 'relational' properties begs the implicit assumption of 'non-relational' properties, what are perhaps best known as 'intrinsic' properties. Jordan and Day further assert it is this notion of intrinsic properties that proves problematic for direct realism, for implicit in the notion of intrinsic properties is the notion of *context independence*. That is, when one asserts a certain property to be 'intrinsic,' one implies the property exists, as it does, independent of the context it is in. One can see this type of thinking at work in discussions regarding mass and gravity. For example, mass is often conceptualized as an intrinsic property because the mass of an object is treated as if it is independent of its context, while weight is treated as a relative property because the object's weight is determined by how its mass interacts with its context.

Despite the long-standing use of this intrinsic versus relative way of describing the relationship between mass and weight, there are those who have recently begun to challenge its assumption of the context-independent nature of intrinsic properties. Jammer [2000] for example, argues the inertial mass of all particles is determined by their interactions with the Higgs field, "...a scalar field that "permeates all of space" and "endows particles with mass" [p. 162]. Bauer [2011] asserts that since mass relies on the Higgs field, mass constitutes an *externally grounded* property, which means that the mass of the particle is dependent on its context. Said another way, mass is context-dependent. As a result, mass is a *relational, non-intrinsic* property.

The idea that all properties are context dependent is consistent with the views of Schaffer [2003] and Dehmelt [1989] who propose that reality may entail no fundamental level whatsoever (i.e., no final, non-relational, intrinsic properties). Instead, they assert reality might be constituted of infinite levels of microstructure. This assertion is consistent with Prior *et al.*'s [1982] *Global Groundedness Thesis*, which asserts that all dispositions (i.e., properties) are grounded (i.e., externally grounded) rather than ungrounded (i.e., intrinsically grounded).

According to Jordan and Day [2015], the above-mentioned critiques of the notion of intrinsic properties severely challenge the ontology of direct realism. For if all properties are inherently context-dependent and, therefore, relational, then the direct realist assumption that we have contact with external reality via ‘relations’ begs the issue of the nature of the ‘things’ that stand in relation to each other (i.e., the ‘relata’). That is, if we assert that two relata share a relation, we imply there is a difference between ‘relata’ and ‘relations.’ This assertion then begs the question whether or not the ‘relata’ themselves are constituted of ‘relational’ properties? The answer to this question is important, for if there is no such thing as a non-relational, intrinsic property, and all properties are, therefore, relational, one cannot distinguish the subjective from the objective on the basis of relational versus intrinsic properties, respectively. In short, if one assumes that all relata are constituted of relations, there can be no intrinsic properties, and reality constitutes a unity in which all things are relational and related to all things.

According to Jordan and Day [2015], the idea that all things are about all things is quite consistent with the notion of ‘internal relations’ that was prominent in idealist philosophy in the 1800s and early 1900s. Bertrand Russell [1911] stated that ‘internal relation’ is the idea that the ‘relations’ between two entities (e.g., entities A and B) are also constituents of A and B. What this means is that part of what constitutes A is its relations with B. Idealist philosophers often relied on the notion of internal relations as a way to avoid Hume’s radical skepticism. That is, they asserted that the ‘objectivity’ of supposed external reality was observer dependent, in that a ‘subject’ (i.e., an observer) was internally related to its ‘objects.’ Thus, according to the idealists and the notion of internal relations, ‘objects’ do not exist independently of ‘subjects,’ and visa-versa [Hegel, 1971; Oakeshott, 1933; Priest, 1991].

While the idea that objects are internally related to their subjects seems a rather outdated concept in contemporary cognitive science, and seems incompatible with indirect and direct realism, both of which accept the assertion that reality exists independently of observers, the notion of internal relations nonetheless constitutes a rather logical conclusion derived from the increasingly popular assertion that all properties are inherently relational. In short, if reality is relational,

through and through, then it makes no sense to define reality as that which is independent of observers. Nothing exists independently of reality. Nothing exists in an intrinsic way. Thus all things are constituted by their relations with all other things, and relations cannot constitute a means by which we distinguish the subjective from the objective.

2.2. A possible reason for unnecessary ontological borders

A major reason why thoroughly relational ontologies such as those espoused by the idealist philosophers of the late 19th and early 20th century were replaced by realism in the 20th century was the fact that the idealist notion of internal relations was problematic for scientists and philosophers who felt reality should be described in terms of the objects of science and logic. They made this assertion because many idealist philosophers utilized the notion of internal relations as a means of asserting the ontological status of concepts such as the spiritual, the transcendental, and the absolute. Some idealist philosophers made such ontological assertions in order to maintain the reality of God, while others did so because they felt they needed to protect the ontological status of phenomena Descartes had relegated to the subjective (e.g., values, meaning, and aesthetics).

Given this connection between the logic underlying the idealist refutation of object-subject divides, and the ontological claims they made because of it, scholars such as Bertrand Russell [1911] felt it necessary to problematize the notion of internal relations in order to challenge the ontological, often spiritual-sounding assertions of the idealists. As a result, Russell attempted to demonstrate that objects are not internally related to subjects. That is, he proposed that while some relations may very well be internal, some are not; that is, they are external. What Russell meant by the notion of external relations was that a relationship between entities A and B does not also have to be constitutive of entity A and entity B. Russell proposed that the relative height of two people, say Mary and Sam, constituted an example of an external relation. According to Jordan and Day [2015],

While it is logically coherent to state that Mary is taller than Sam, the “taller” relation is not constitutive of either Mary or Sam. That is, the ‘taller’ relation depends, of course, upon Mary and Sam, but it exists externally from Mary and Sam in the sense that it plays no role in the properties that constitute Mary or Sam. Russell uses this notion of external relations to propose a correspondence approach to reality and truth in which ‘entities’ share ‘relations’ and, via those ‘relations’ constitute components of ‘complexes.’ Having assumed that he had logically negated the notion of internal relations, Russell then proposed that we get on with the empirical, metaphysical business of scientifically describing reality ‘as it is,’ independent of observers. [p. 7]

By asserting the independence of subjective and objective properties and thus, providing a philosophical grounding for the realist assertion that the important thing about reality was its independence of observers (i.e., subjects), Russell believed he had created an ontological framework within which the practice of science would be capable of revealing the objective properties of observer-independent reality. This allowed Russell, as well as 20th century science in general to assert that ontology was empirical in the sense that one could use the scientific method to discover that which is observer-dependent (i.e., that which is real). This, of course, was a direct challenge to the idealist assertion that reality constituted a thoroughly relational, internally related unity.

The proceeding analysis of the anti-idealist sentiment that historically motivated the emergence of realism was important because it sheds light on the historical context within which realism came to be. The notion of external relations and its assertion that objects are independent of their objects was created by Russell [1911] as a means of fighting an ontological battle with the idealists and their notion of internal relations. It is our contention that this struggle had the historical consequence of placing ontological demands on the practice of science that the practice is logically unable to bear. This assertion is supported by the fact, as was

stated previously, more and more contemporary scholars [Bauer, 2011; Dehmelt, 1989; Jammer, 2000; Prior *et al.*, 1982; Schaffer, 2003] are proposing approaches to ‘properties’ that basically constitute 21st century recapitulations of the idealist notion of ‘internal relations.’ That is, if all properties are ‘relational’ then all properties are context dependent, which, in turn means that all properties are constituted of all other properties. In short, reality constitutes an internally related unity within which the use of dialectic counterparts (e.g., objective versus subjective, or relational versus intrinsic) can lead to assumptions of ontological independence that are logically unnecessary. Russell [1911] as well as a host of other 20th century scholars were led to make such logically unnecessary assertions in the attempt to replace the often religiously-motivated ontology of the idealists with a completely non-spiritual ontology based on the independence of subjects and objects.

3. Foregrounding Context in Ontology

It is our contention that while we understand the anti-idealist motives of the realists, the resultant assertion that reality is that which is independent of observers simply seems increasingly problematic, difficult to sustain, and logically unnecessary. To be sure, there were others who were aware of this problem. Dewey [1929] for example, had the following to say on the issue of science and subject-object independence:

The notion that the findings of science are a disclosure of the inherent properties of the ultimate real, of existence at large, is a survival of the older metaphysics. It is because of injection of an irrelevant philosophy into interpretation of the conclusions of science that the latter are thought to eliminate qualities and values from nature. This created the standing problem of modern philosophy:— the relation of science to the things we prize and love and which have authority in the direction of conduct. [p. 102]

Clearly, Dewey [1929] felt that the subject-object divide inherent in realist approaches to reality and science was logically unnecessary and misleading. As a result, Dewey espoused a pragmatic approach to science. Specifically,

But the search does not signify a quest for reality in contrast with experience of the unreal and phenomenal. It signifies a search for those relations upon which the occurrence of real qualities and values depends, by means of which we can regulate their occurrence. To call existences as they are directly and qualitatively experienced ‘phenomena’ is not to assign to them a metaphysical status. It is to indicate that they set the problem of ascertaining the relations of interaction upon which their occurrence depends. [p. 103–4]

Dewey’s choice use of the phrase “relations of interaction” is consistent with the idealist notion of internal relations, in that, the context in which a phenomenon takes place is conceptualized as being thoroughly relational. In short, context is treated as constitutive of the phenomenon as opposed to constituting a background against which a “real,” “observer-independent” phenomenon is foregrounded.

Given the above mentioned issues with realism’s commitment to defining reality in terms of object-subject independence, the purpose of the remainder of this chapter is to present a recently developed approach to cognitive science (i.e., Wild Systems Theory—WST) that is simultaneously (1) consistent with the idealist notion of internal relations and its attendant assumption that reality constitutes a thoroughly-relational unity, and (2) consistent with the practice of science.

3.1. *WST and the notion of embodied context*

Wild Systems Theory (WST) is a recently developed framework [Jordan, 2008, 2013; Jordan & Day, 2015a,b; Jordan & Ghin, 2006, 2007; Jordan & Heidenreich, 2010; Jordan & Vinson, 2012] that conceptualizes

organisms as multi-scale, self-sustaining energy-transformation systems, much in the manner of certain physicists [Schrödinger, 1992], theoretical biologists [Kauffman, 1995] and ecologists [Odum, 1988]. WST's reliance on the notion of self-sustaining energy transformation systems stands in contrast to contemporary approaches that conceptualize organisms via technological metaphors such as switchboards and computers, or dynamical metaphors such as Watt Governors and convection rolls.

What WST means by the notion of *self-sustaining* is that the energy exchanges that constitute the system (e.g., the chemical work that gives rise to biological systems) produces catalysts (e.g., other chemicals) that feedback into and sustain the work that produced the catalyst, or some other reaction in the system. What is meant by *multi-scale* is the idea that organisms are constituted of multiple, nested scales of self-sustaining work. Jordan and Vinson [2012] describe this idea as follows:

At the chemical level, self-sustaining work has been referred to as autocatalysis [Kauffman, 1995], the idea being that a self-sustaining chemical system is one in which reactions produce either their own catalysts or catalysts for some other reaction in the system. At the biological level, self-sustaining work has been referred to as autopoiesis [Maturana and Varela, 1980], again, the idea being that a single cell constitutes a multi-scale system of work in which lower-scale chemical processes give rise to the larger biological whole of the cell which, in turn, provides a context in which the lower-scale work sustains itself and the whole it gives rise to [Jordan and Ghin, 2006]. Hebb [1949] referred to the self-sustaining nature of neural networks as the 'cell assembly', the idea being that neurons that fire together wire together. Jordan and Heidenreich [2010] recently cast this idea in terms of self-sustaining work by examining data that indicate the generation of action potentials increases nuclear transcription processes in neurons which, in turn, fosters synapse formation. At the behavioural level,

Skinner [1976] referred to the self-sustaining nature of behaviour as operant conditioning, the idea being that behaviours sustain themselves in one's behavioural repertoire as a function of the consequences they generate. Streeck and Jordan [2009] recently described communication as a dynamical self-sustaining system in which multi-scale events such as postural alignment, gesture, gaze, and speech produce outcomes that sustain an ongoing interaction. And finally, Odum [1988] and Vandervert [1995] used the notion of self-sustaining work to refer to ecologies in general. [p. 235]

WST's assertion that organisms constitute nested scales of self-sustaining work increases the coherence of our scientific description of organisms because it forces us to focus on the homological nature of the self-sustaining, energy-transformation dynamics that transcend the phyla as well as the complex of multi-scale energy-transformation systems that constitute a single organism. Technical metaphors such as switchboards and computers lead us to ignore these multi-scale energy-transformation homologies that living systems do not share with technological systems. As a result, the use of technological metaphors leaves us needing to explain how it is that the internal workings of our technologically inspired model are actually 'connected' to the external context. In short, by utilizing technologically inspired models of organisms, we are, either implicitly or explicitly, accepting the organism-environment, subject-object divide unnecessarily proposed by realism, and, as a possible further result, accepting realism's assertion that reality is to be defined in terms of observer independence.

Contrary to approaches that find themselves committed to subject-object divides, WST leads one to approach the study of organisms from the perspective of multi-scale, self-sustaining homologies. As a result, one is able to focus on what the internal and external contexts of an organism have in common: specifically, energy transformation. As a result, an organism's external context is conceptualized as a self-organizing energy-transformation hierarchy [Odum, 1988; Vandervert, 1995], while the organism's internal context is likewise conceptualized

as a multi-scale, self-sustaining energy transformation system that is able to sustain itself in the larger-scale external context because the energy transformations that constitute the system produce their own catalysts.

Given this thoroughly relational conceptualization of the relationship between organisms and environments, Jordan and Ghin [2006] coined the phrase, *the fuel source dictates the consumer*. What this means is that any system that sustains itself via the consumption of a particular fuel source (e.g., plants on sunlight, herbivores on plants, or carnivores on herbivores) must be constituted in such a way that its dynamics afford it the ability to overcome the contextual constraints that need to be addressed to capture the fuel source. Said another way, organisms constitute multi-scale, self-sustaining embodiments of the multi-scale (i.e., phylogenetic, cultural, ontogenetic, and social) contexts within which they emerged and sustain themselves.

3.2. *WST, reality, meaning, and truth*

WST's assertion that organisms constitute embodiments of context renders it consistent with the idealist notion of internal relations and the idea that reality constitutes a thoroughly relational unity. It is also consistent with the ideas of those who have recently challenged the idea of intrinsic properties [Bauer, 2011; Dehmelt, 1989; Jammer, 2000; with Prior *et al.*, 1982; Schaffer, 2003]. As a result, WST provides a means of coherently addressing the issues of reality, meaning, and truth in a way that avoids the problems encountered by realism and its assertion of object-subject independence.

3.2.1. *Reality*

Given WST's ability to present an account of organisms that leaves them thoroughly, relationally embedded in context, it allows one to further conceptualize organisms as embodiments of the reality (i.e., context) within which they emerged and sustain themselves. That is, organisms constitute reality within reality (i.e., context within context). This allows one to ignore the epistemic, subject-object gap espoused by realism, and leads to the following assertion;

...there is no epistemic gap between an organism and its environment. Organisms do not need to be ‘informed’ by environments in order to be about environments because they are necessarily ‘about’ the contexts they embody. Rather, what self-sustaining systems need do is sustain relationships with the contexts in which they are embedded in ways that lead them to sustainment. According to WST, meaning is constitutive of embodied context (i.e. bodies). As a result, living systems are necessarily meaningful [Jordan, 2000_a], not because a body is alive or dead, because it is physical, or because it is biological. Living is meaning because it is sustained, embodied context. [Jordan & Vinson, 2012, p. 9]

3.2.2. *Meaning*

Given that it lacks an epistemic gap, WST avoids the subjective-objective divide assumed by realism. Instead, by conceptualizing organisms as embodiments of context, WST is able to assert that organisms are naturally and necessarily ‘about’ the contexts they embody. As a consequence, embodiments of context are inherently meaningful. Defining meaning in terms of embodied context makes it possible for meaning to be constitutive of what organisms are. This then allows one to propose an account of meaning (i.e., phenomena such as phenomenology, consciousness, meaning, and value) that does not relegate meaning to the subjective/internal side of the objective-subjective divide espoused by realism.

To get a grip on the relationship between the notion of embodied context and phenomena such as consciousness, meaning, and value, Jordan and Ghin [2006] refer to the meaning inherent in the embodied context of a single-cell organism as *proto-consciousness*. This notion then allows one to explain how the proto-consciousness of single-cell systems eventually scaled up, over the course of evolution, into

phenomena such as self-awareness. According to Jordan and Vinson [2012]:

It was possible for self-sustaining systems to scale-up from the level of single-cell organisms to the level of human beings because their status as energy-transformation systems simultaneously rendered them a potential fuel source for any system that embodied the constraints necessary to sustain itself on such embodied energy. As an example, the emergence of herbivores gave rise to a context that afforded the emergence of carnivores. A significant constraint of being a carnivore, however, was the need to capture a moving fuel source. Doing so required, and still requires, anticipatory structures regarding the future location of the moving target. Jordan and Ghin [2006] assert that the embodiment of anticipatory dynamics in the neuromuscular architecture of organisms capable of propelling themselves as a whole toward anticipated locations constituted the phylogenetic emergence of *anticipatory* aboutness. That is, the self-sustaining dynamics of one system came to be ‘about’ the future dynamics of another system. WST equates such anticipatory aboutness with the traditional notion of *mind*, and proposes that phenomena that have received labels such as *memory*, *thought*, *phenomenology*, and *self-awareness* constitute evolutionary recursions (i.e., scale-ups) of the anticipatory dynamics embodied in self-sustaining systems. Given that all self-sustaining systems constitute embodiments of context and are therefore, necessarily ‘about’ context, their anticipatory dynamics likewise entail ‘aboutness.’ [p. 12]

3.2.3. *Truth*

Although WST's notion of self-sustaining embodied context provides a thoroughly relational approach to reality and meaning that avoids the problems of realism's object-subject divide, it still needs to address another problem that realism was meant to solve. Specifically, by conceptualizing reality in terms of observer independence, realism was able to propose what Jordan and Day [2015] refer to as a *correspondence theory of truth* in which subjective experiences were assumed to correspond to external events, and the veridicality of those experiences, as well as any statements made about them, were to be determined by the degree to which the experiences and the statements accurately corresponded to external reality.

The correspondence theory of truth differs significantly from the coherence driven approaches espoused by idealist philosophers in the 1800s and early 1900s. Of course, given their refusal to conceptualize reality in terms of observer independence, it is somewhat obvious the idealists could not have advocated correspondence between the objective and the subjective as a criterion for truth. Again, the idealists felt compelled to avoid the correspondence approach because its reality-observer split led to objective-subjective divides that rendered the latter causally unnecessary and in need of ontological justification [Gardner, 2007; Hegel, 1971; Priest, 1991; Tseng, 2003]. Given their commitment to the reality of phenomena such as consciousness, value, and meaning, the idealists avoided the ontological risks inherent in the correspondence approach and, instead proposed an approach that asserts the reality of consciousness, value, and meaning and assesses truth in terms of the degree of coherence (i.e., non-contradiction) [Oakeshott, 1933; Tseng, 2003].

To be sure, there are contemporary philosophers who make use of a coherence approach to truth in which 'lack of contradiction' (i.e., coherence) refers to the degree to which one's statements regarding a phenomenon do not contradict one other [Kvanvig, 1995; Lycan, 2012]. These contemporary "coherentists" [Lycan, 1998; Quine and Ullian, 1978; Thagard, 1978] assert a view similar to the following:

...what justifies...the formation of any new belief—is
that the doxastic move in question improves the

subject's explanatory position overall and/or increases the explanatory coherence of the subject's global set of beliefs. [Lycan, 2012, p. 6]

While this coherentist approach to beliefs clearly utilizes coherence as a means of assessing the truthfulness of statements, it addresses neither Jordan and Day's [2015] nor the idealist's concerns regarding the reality of experience. That is, while Lycan's [2012] variety of coherentism utilizes 'lack of contradiction' as a metric for the truth status of beliefs, it does not do so to measure the degree of 'truth' inherent in experience. It is therefore logically possible one could hold a coherentist perspective regarding the truth status of beliefs while simultaneously holding correspondence beliefs regarding the truth status of experience.

To address this issue, the idealist philosopher Michael Oakeshott, in perhaps his most influential book, *Experience and its Modes* [1933] proposed a coherence driven approach to the reality of experience. He did so by first describing reality in terms of experience, stating, "...experience is a single whole, within which modification may be distinguished, but which admits of no final or absolute division" [p. 27]. In addition,

Subject and object are not independent elements or portions of experience; they are aspects of experience which, when separated from one another, degenerate into abstractions. Every experience...is the unity of these, a unity which may be analyzed into these two sides but which can never be reduced to a mere relation between them... [p. 60].

To be sure, Oakeshott's use of the concept 'experience' makes it sound to contemporary ears as if he is referring to the subjective side of realism's objective-subjective divide. However, for Oakeshott, the terms 'reality' and 'experience' were basically synonymous, not because he assumed that reality was purely subjective, but because of his idealist belief that reality constituted an internally related unity and his resultant unwillingness to divide reality into subject-objective categories. Given

his commitment to the reality of what the realists referred as the subjective (e.g., consciousness, meaning, and value), he chose a concept for reality that allowed him to engage his correspondence driven contemporaries while simultaneously maintaining his belief in the reality of experience. In short, he referred to reality via the concept ‘experience.’

Given Oakeshott’s assertion that experience (i.e., reality) constitutes an internally related unity that cannot be subdivided into independent objective and subjective components, he defined the truth status of experience as that which we are compelled to believe in experience. What this admittedly odd statement means is that the truth status of experience is to be assessed by the extent to which experience contradicts itself (i.e., the degree to which experience is coherent). For example, if I walk into my hallway at night and see a ghost at the other end of the hall, the first thing I will do is rub my eyes, and I will do so to test whether or not the ghost experience replicates. If it does not, the experience is incoherent (i.e., it contradicts itself) and I assume the experience has more to do with me than some phenomenon outside of me. If the ghost experience does replicate, the lack of moment-to-moment contradiction leads me to assume the experience is about something outside of me. According to Oakeshott, it is this persistent lack of contradiction that underlies the truth status of experience.

Given Oakeshott’s coherence approach to reality and truth, he further asserted that the practice of science constituted a *mode of experience*. Jordan and Day [2015] describe this notion in the following way:

What he meant by ‘mode’ is that science constitutes a distinct means of generating abstractions about the internally related unity in which we are embedded. It is an ‘abstraction’ in the sense that it is constitutive of reality (i.e. it is ‘within’ the reality it is attempting to describe) and can therefore never be ‘outside’ of reality, looking ‘at’ reality. As a result, it should be conceptualized as a recursion on reality—an abstraction about that from which it emerged and within which it is entailed. [p. 11]

According to Oakeshott, what determined the truth status of scientific statements was the degree of quantitative coherence that can be achieved in the description of a phenomenon, both individually and collectively. Given the importance of *quantitative* coherence, phenomena such as personal opinion were considered irrelevant to the truth status of scientific statements

Given Oakeshott's description of science as a mode of experience, as well as his reliance on coherence as the measure of truth, it is clear he denies the realist, correspondence driven assertion that science is capable of parsing reality into objective and subjective components. As a result, as was the case with Dewey [1929], science cannot be ontological in the sense that it is not capable of stripping away subjectivity and revealing objective reality, as it exists, independent of observers. Not because stripping the subjective away from the objective is impossible, but because the objective-subjective division is an incoherent (i.e., contradictory) assumption in the first place.

4. Conclusions

The purpose of the present paper was to make the case that our use of the concept *context* in contemporary cognitive science entails an implicit, *ceteris paribus* commitment to the realist (both indirect- and direct-) assumption that the important thing about reality is its independence of subjective observers. We problematized this approach to context by citing recent work that challenges realism's implicit assumption that while certain properties are relational (e.g., weight and its dependence on contextual interactions between mass and gravity), others are non-relational (i.e., intrinsic). Specifically, we cited the work of a host of scholars [Bauer, 2011; Dehmelt, 1989; Jammer, 2000; Prior *et al.*, 1982; Schaffer, 2003] who deny the notion of non-relational, intrinsic properties, and assert that all properties are 'externally' grounded, meaning they derive their status as properties by virtue of being grounded within a larger-scale context, with some scholars asserting the larger scale context includes reality as a whole. We then pointed out that

this contemporary attack on intrinsic properties seemed to recapitulate the late 19th- early 20th-century idealist critiques of the realisms that were prominent during their time, particularly Locke's mediated theory of perception.

Having problematized the notion of non-relational, intrinsic properties we then presented Wild Systems Theory (WST) as a contemporary approach to cognitive science that is consistent with the notion of a thoroughly relational ontology. Specifically, we described Jordan and Ghin's [2006] assertion that organisms constitute multi-scale, self-sustaining embodiments of context that are able to sustain their integrity as systems because the energy transformations of which they are consisted give rise to catalysts for either the work (i.e., energy transformation) that produced the work, or some other work in the system. By conceptualizing organisms as embodiments of the contexts within they emerged and sustain themselves, Wild Systems theory is able to address the issues of reality, meaning, and truth in ways that avoid the problems introduced into cognitive science by realism. In addition, by conceptualizing organisms as embodiments of context, we were able to propose an ontology in which context is foregrounded, as opposed to being treated as background, as is the case in realism. While the notion that reality is ultimately constituted of context, and that we, as embodiments of that context, naturally constitute embodiments of that context and are therefore naturally and naturally meaningful (i.e., about the contexts we embody) coherently explains how meaning, consciousness, and value exist, we are sure it will take some time before coherence it taken to be a sufficient criterion for ontology. But given WST's ability to avoid the threats to the reality of the 'subjective' engendered by realism, we believe the wait will be worth it.

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