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ATINER's Conference Paper Series

LIT2012-0277

**Epistemological Holism and
Meaning Holism**

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URL Conference Papers Series: www.atiner.gr/papers.htm

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ISSN 2241-2891

15/11/2012

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This paper should be cited as follows:

Wang A. and Dong, B. (2012) **“Epistemological Holism and Meaning Holism”** Athens: ATINER'S Conference Paper Series, No: LIT2012-0277.

Epistemological Holism and Meaning Holism

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Abstract

This paper aims to discuss the validity of epistemological holism and meaning holism and their connection. We begin with the problem about the inference from epistemological holism to meaning holism and then review Esfeld's definition of holism by identifying its necessary and sufficient conditions. Next, we use this definition of holism to examine epistemological holism and meaning holism and find that both fit the definition, but with different family of properties, which means that both kinds of holism are valid but neither is derived from the other, though there is some connection between meaning holism and epistemological holism.

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Concerning the relationship between epistemological holism and meaning holism, there is a controversial issue. One is that epistemological holism leads to meaning holism. This was historically attributed to Quine (1951) in “Two Dogmas of Empiricism” as a weapon against the special kind of verificationism advocated by the logical empiricists. These empiricists identified meaning with empirical content. They believed that the meaning of an individual sentence is given by conditions for its verification and falsification that both consist merely in the occurrence of certain sensations. Quine criticizes the idea that isolated sentences have a separate meaning in this sense, but he remains in favor of the idea that meaning (if there is such a thing) is empirical content. So when he infers meaning holism from epistemological holism (Quine, 1969: 80), he uses two premises: the Duhem-Quine thesis (also called epistemological holism) and the ‘verification theory of meaning’. Thus his route from epistemological holism to meaning holism might be summarized as follows:

Premise 1: Empirical content is holistic (epistemological holism);

Premise 2: Meaning is empirical content (Quine’s verificationism);

Conclusion: Meaning is holistic.

This reasoning is very controversial and has been much discussed. Fodor and Lepore (1992: 43) criticized it by arguing that “even the conjunction of confirmation holism and verificationism is compatible with the denial of semantic holism”, as they define semantic holism as a property such that, if anything has it, then lots of other things must have them too (Fodor and Lepore, 1992: 2), which is different from Quine’s view. However, their objections can be successfully countered (Okasha, 2000). Some philosophers such as Prawitz (1994) and Peacocke (1997) argue that endorsing premise 1 and accepting the foregoing inference does not force anyone to espouse the conclusion, because one can fail to accept premise 2. Cozzo (2002: 28) holds that meaning holism is wrong and thus doubts that it is derived from epistemological holism which is right. He explains away the problem by using the notion of *primitive epistemic properties*. For him, only the primitive epistemic properties (instead of all the epistemic properties) constitute the meaning of an expression; thus it is impossible for meaning holism to be derived from epistemological holism.

In the following, we will argue that both epistemological holism and meaning holism are right, but the latter is not derived from the former. We begin with the definition of holism and then use this definition to examine the two kinds of holism and finally we will examine the connection of the two.

1. The sufficient and necessary conditions of holism

The word ‘holism’, etymologically, is derived from a Greek word *ὅλος* (holos) with the meaning of *all, whole, entire, total*. Though there is no consistent unified definition about holism in the literature, its main gist is that the wholes have some metaphysical, epistemological or explanatory priority over the elements or parts composing them (Bunnin and Yu, 2001: 443). Here three items are involved: the whole (hereafter W), its parts (hereafter P) and the relationship between W and P. What kind of entities are W and P so that

holism holds? In other words, what are the sufficient and necessary conditions of holism? Both advocates and critics of holism have never been quite clear about these questions or have oscillated between different possible choices. This is one of the reasons why the discussion around holism has been so clumsy and unilluminating. This section attempts at clarifying these questions.

3.1 *The properties of the whole W*

As far as W is concerned, there are two kinds: wholes with **boundedness** and wholes with **unboundedness**. The latter identifies the W with the whole universe, as is held by the Vedic religion of Hinduism. This is not what most philosophical holists take, though they don't generally agree with the question of what the integrating whole is with respect to which a particular holistic unit has to be evaluated. That is, most holistic philosophers take the wholes with boundedness though their holistic units are different. For example, the holistic unit taken by Duhem is just the whole of physics, whereas Quine takes the whole of science, including the formal science (logic). The discrepancy does not simply arise from the fact that Duhem over-looked the possibility of taking the whole of science, but rather from the fact that he explicitly denied this possibility. For the picture of science offered by the various holistic positions according to the choice made for a W, Moulines (1986 : 319) provides a summary of five versions of holism: a) Kuhn-Stegmuller's holism: W is an empirical theory in the precise structuralistic sense; b) Duhem1's holism: W is a group of theories within a discipline; c) Duhem2's holism: W is a discipline; d) Quine's holism: W is the whole of science; e) Hegel's holism: W is the whole of culture. All that has been more or less implicitly held so far is that none of them appears to be either blatant nonsense or logically contradictory.

We hold that the specific holistic unit is bounded. Methodologically, boundedness implies the closeness of the domain of the questions in discussion, which is the base for a holistic approach to be implemented.

3.2 *The properties of the parts Ps*

The whole consists of parts. However, what entity can be a part P of W and how are the parts related to each other? These questions are very important that a holist is supposed to answer because it involves what entity can be counted as a W or in other words, what are the necessary and sufficient conditions of holism? Esfeld (1998) holds that the parts of a whole should satisfy the following three conditions: they have (a) *a generic ontological dependence* on each other, have (b) *a family of qualitative properties* and are (c) arranged in a suitable way with other things. We will explain the three conditions one by one.

First, the parts of W have a generic ontological dependence on each other. The notion of generic ontological dependence is that there can be no individual of a certain kind unless there is some other individual of a certain kind (Simons, 1987). Or we may say that any individual which is F is, with respect to its being F, ontologically dependent on there being some other individual which is G. The notion of a generic ontological dependence can be formulated as follows (Esfeld, 1998: 368):

$$(1) \quad \Box \forall x \{Fx \supset \exists y (Gy \wedge y \neq x)\} \wedge \Diamond \exists x Fx \wedge \neg \Box \exists y Gy.$$

This formula has three parts; the first part is the main one and the other two are additional. The main part says: it is necessary that if there is something which is F, there is some other thing which is G. The second part states: it is possible that there is something which is F. This is intended to rule out the vacuous case in which there is nothing that is F in any possible world. The third part means: it is not necessary that there is something which is G. If it were allowed that there is something which is G in every possible world, the notion of generic ontological dependence would be trivialized: every individual in every possible world which is not G would be ontologically dependent on there being something which is G just because there exists something which is G in every possible world anyway. Obviously, formula (1) does not impose the condition that something which is F is necessarily F; if we impose the condition, any individual which is F cannot exist unless there is some other individual which is G, and thus the generic ontological dependence is regarded as concerning *the existence* of individuals. By contrast, formula (1) applies to individuals in so far as they instantiate any relational property. This conception leaves open whether or not these individuals can exist without having that property.

The generic ontological dependence is *transitive*. Assume that it is necessary that if there is an x which is F, there is a y which is G. Assume furthermore that it is necessary that if there is a y which is G, there is a z which is H. In this case, it is necessary that if there is an x which is F, there is a z which is H.

Furthermore, the generic ontological dependence for parts of W is a *symmetric relation*: it is not only necessary that if there is an x which is F, there is some other individual y which is G; but it is also necessary that if there is a y which is G, there is some other individual x which is F. What we are looking for is the sort of dependence that captures the way in which the parts of a holistic unit are dependent on each other. From formula (1), we can see why a heap of sand is not a candidate for a holistic system; it is because individual grains of sand are independent of each other.

Generic ontological dependence as set out in formula (1) is *not tailor-made for holism*. It is not *sufficient* to characterize what it is for something to be a part of W, because it applies to individuals in so far as they instantiate any relational property. We need further to explore what kind of properties that the parts of W instantiate so that holism for W holds. For this, Esfeld's (1998: 371) uses the term *a family of qualitative properties*. For any W, *there is a family of qualitative properties which make something a part of it if this thing is arranged with other things in a suitable way*. If and only if something has all or nearly all the properties that belong to such a family of qualitative properties, and if and only if this thing is arranged with other things in a suitable way, is it a part of W. Having all or nearly all the properties that belong to such a family of properties is a *necessary condition* for something to be a part of a W; it is a *sufficient condition* in conjunction with the condition of a suitable arrangement.

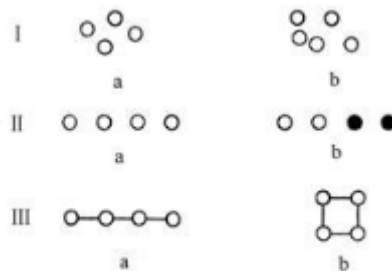
This *family of properties* is qualitative because they make something a thing of a certain kind. It tightens up the notion of a part of W, as it rules out

inappropriate candidates for the parts of W. Consider the case of a social community of thinking beings. Maria, a human, is a part of such a community. The property which makes her a part of the community, given a suitable arrangement with other humans, is her thinking in the sense of following rules in the first place. Bones, in turn, are parts of Maria. But bones are not parts of the community, as they are not thinking beings and do not follow rules. Hence, being a part of W is not transitive: if A is a part of W, and B is a part of A, it does not follow that B is a part of that W as well.

Nevertheless, the notion of a family of qualitative properties on its own is not sufficient to pick out the properties which we are looking for. Thus a further condition of a *suitable arrangement* with other things is imposed. That is, these properties should be relational in the sense that one thing can instantiate them only if there are other things together with which this thing is arranged in such a way that there is a W.

Usually there are three kinds of arrangements shown in **Picture 1**, among which only the third kind is holistic. The first arrangement can be distinguished by the number of the elements while the second can be done by the types of the elements. Both of them have elements whose property is **summative**. The third arrangement is quite different from the previous two in the sense that it has elements whose property is **constitutive**; the elements interact with each other and can only be distinguished by the internal relationship among the elements.

Picture 1 Three kinds of arrangements revised from Bertalanffy (1968: 54)



Piaget (1970) holds that the arrangement of the elements of W is essentially a kind of operation; he emphasized that structure is primarily a cluster of transformational relations, representing the law of arrangements.

3.3 The general conception of holism

If we combine the above properties, i.e., boundedness of W, generic ontological dependence of the parts of W, the family of qualitative properties and suitable arrangement that the parts of W have, we will get the notion of holism as follows (Esfeld, 1998: 375 revised):

W is holistic if and only if the following condition is satisfied by all the things which are its constituents: with respect to the instantiation of a family of qualitative properties, a thing is ontologically dependent in a generic way on there actually being other things together with which it is arranged in such a way that there is a holistic W.

Obviously, the design feature of a holistic thing is a certain sort of dependence among its constituent parts. Since the sort of dependence in question concerns individuals in so far as they instantiate certain properties, we can consider these

properties themselves as holistic. Holistic properties are necessarily relational. A relational property is holistic if and only if it satisfies the following two conditions: (1) It belongs to a family of qualitative properties which make something a constituent of a W in case there is a suitable arrangement. (2) Nothing can instantiate this property unless there actually are other things together with which this thing is arranged in such a way that there is a holistic W.

2. Epistemological holism

To judge whether epistemological holism is valid or not, we can check whether it satisfies the above necessary and sufficient conditions of holism.

Epistemological holism is roughly the claim that a single scientific theory cannot be tested in isolation, because a test of one theory always depends on other theories and hypotheses which can be tested only as a whole. The W in question is the whole knowledge system which consists of various statements or theories or hypotheses; thus it covers all those empirical contents and deductive and non-deductive inferences, all of which are epistemic values.

Is epistemological holism valid? The answer is yes simply because it satisfies the necessary and sufficient conditions of holism. First, for every part of the epistemological system, say a statement, a theory or a hypothesis, there is a family of qualitative properties. The family of properties includes empirical content, having truth value, being confirmed or being disconfirmed, being justified or being unjustified, etc. These are properties which make something a statement, or a theory or a hypothesis, and hence a constituent of the epistemological system in case a suitable arrangement with other statements or hypotheses or theories is realized.

Second, these properties are relational in the following sense: anything that has these properties is dependent on its being arranged with other statements or theories or hypothesis so that there is a system of knowledge. Firstly, we often justify an asserted statement by exhibiting other statements. For example, the statement “He beat his wife before” can be justified by the statement that “He has stopped beating his wife.” Secondly, a theory or a hypothesis cannot be by itself confirmed or disconfirmed. Instead, the consequences of a theory or a hypothesis typically rest on background assumptions from which to derive theories or hypotheses. This prevents a theory from becoming conclusively falsified through empirical means if the background assumptions are not proven since background assumptions sometimes involve one or more scientific theories, and scientific theories are never strictly proven. For instance, to disprove the idea that the Earth was moving, some people noted that birds did not get thrown off into the sky whenever they let go of a tree branch. That datum is no longer accepted as empirical evidence that the Earth is not moving because we have adopted a different background system of physics that allows us to make different theories or hypotheses. Thirdly, inferential links are also dependent on their being arranged with other statements or theories or hypotheses. For example, experts infer “The megalithic monuments of Île Longue were built about four thousands years before Christ” from a sentence stating levels of radioactivity of archaeological

finds only because they accept many other statements or theories or hypotheses belonging to physics and even to botany (Renfrew, 1973). Another example: a detective's inference from "we found this bloodstain in room 7" to "Tom was in room 7" is accepted because a DNA test is performed and molecular biology (including crucial statements concerning DNA) is accepted. For any statement, there can be relevant (linguistic and non-linguistic) evidence or counterevidence which is recognized as such only through the acceptance of systems of other statements, and in advance we cannot set any limit to the comprehensiveness of such systems: evidence and counterevidence can originate anywhere in the epistemic context. Many new methods of verification for old statements result from new scientific and technological developments: new diagnostic procedures, new tests for recognizing chemical substances, new media of communication.

In a word, epistemological holism is a fact.

3. Meaning holism

Meaning holism, also called semantic holism and linguistic holism, is the thesis about the interrelatedness of meanings within a representational system *S*, like language system or mental system. Specifically, every representation's meaning in *S* depends on that of every other representation in *S*. Does meaning holism satisfies the necessary and sufficient conditions of holism we talked about in Section 3?

Before answering this question, it is necessary to mention the arguments against meaning holism. Philosophers like Dummentt (1976: 42-45; 1991: 221) argues that meaning holism would make language learning impossible if one does not know the entire language. Philosophers like Fodor and Lepore (1992: 11-22) hold that meaning holism would make communication impossible because meaning holism would lead to meaning indeterminacy. Fodor and Lepore's (1991: 332-37) also argue that meaning holism is just the opposite of the principle of compositionality which is true.

These arguments against meaning holism are not convincing as they just focus on the bad consequences that meaning holism might bring about, rather than examining meaning holism itself. Furthermore those bad consequences are not necessarily derived from meaning holism, which is not our focus here.

To investigate whether meaning holism satisfies the necessary and sufficient conditions of holism, we should first make clear what meaning is. Most philosophers of language these days think that the meaning of an expression is a certain sort of entity and how to pair expressions with the entities which are their meanings would concern the nature of these entities. Actually, different theories of meaning have quite different views about such an entity. For example, meaning is regarded as a mental idea for Locke, a proposition for some philosophers such as those in the Vienna Circle, a thing referred to by a singular term, a calculation of the total sum of the parts of a sentence together with the way of combination, the truth conditions a sentence should satisfy, uses in context, or psychological entities such as beliefs, hopes, intentions, etc. No matter what entities meaning is regarded as, it is a relational concept, having something to do with the linguistic expression, the physical

object an expression refers to, the contextual uses, or the psychological entity. We argue that the meaning of an expression in use should be considered as the combination of all the above entities.

Then the question is: what is the W for a meaning of a linguistic expression? And what are its parts? Most researchers who hold or argue against meaning holism take the whole language system as the W and words and sentences are the parts. Thus the meaning of each individual part is determined by the whole language. But this view is not adequate if we consider the meaning of an expression as a complex obtained by the interaction among linguistic symbols, context of use, physical entities the expression refer to, the psychological states involved in the expression. Hence, here we advocate the term *meaning-system*. It is used to refer to the set of all the meaning values associated with the expressions of the language L in a given meaning-situation where all the entities related may be involved. Thus, meaning-system can be regarded as W and its parts are the individual meaning values associated with all the expressions of L.

Now let us consider the meaning-system W and its constituent parts Ps to see whether meaning holism holds. For every meaning value, a constituent P of the meaning-system, there is a family of qualitative properties which make it a constituent of the W in case there is a suitable arrangement. This family of properties includes at least the following: 1) *Contextuality*: meaning is weaved into context of use (Malpas, 2002) and context is essential for the structure and possibility of meaning. In the context of the whole language, meaning in general may arise while in the context of particular use, particular meanings arise. The latter context includes the former. Context and meaning are co-relative concepts. To situate something within a context is already to make it meaningful, while to grasp something as meaningful is also to grasp its situation within a context. The tie between meaning and contextuality can be expressed in terms of the idea that meaning is always contextual. 2) *Subjectivity*. Meaning in context involves speaker's communicative intention, i.e., speaker meaning (Grice, 1957 1969) and hearer's interpretation. When communication is carried out successfully, the resulting meaning is, in some important sense, jointly construed by the speaker and the hearer. The joint meaning is a type of the joint commitment of a speaker and a hearer to the extent that a specific communicative act has been performed by the speaker. Joint meaning is therefore regarded as a deontic concept, which entails obligations, rights, and entitlements, and cannot be reduced to epistemic and volitional mental states like personal belief, common belief, personal intention, and communicative intention (Carassa & Colombetti, 2009). 3) *Objectivity*. Meaning is objective in at least two senses: one is that meaning is epistemologically objective but metaphysically subjective. The subjective feature of meaning mentioned in point 2) is metaphysical in the sense that meaning does not exist physically, but it is epistemologically objective because we can know it, recognize it and understand or interpret it. Another sense of objectivity of meaning is that it is concerned with the states of affairs in the world that their existing intentional states represent. 4) *Integration of the three*

properties mentioned above. The three properties are woven together to determine something as a part of the meaning system. Here we can borrow Davidson's (1991) triangulation view to explain this integration. In 'Three Varieties of Knowledge', Davidson develops the metaphor of triangulation into the idea of a three-way conceptual interdependence between knowledge of oneself, knowledge of others and knowledge of the world. Just as knowledge of language cannot be separated from our more general knowledge of the world, so Davidson argues that knowledge of oneself, knowledge of other persons and knowledge of a common, 'objective' world form an interdependent set of concepts no one of which is possible in the absence of the others. According to Davidson, 'triangulation' is necessary both to fix the meanings of one's thoughts and utterances and to have the concept of objectivity. For our purpose here, we can say that oneself and other involve subjectivity and the world is related to objectivity. They form contextuality for meaning production. And this contextuality not only gives rise to meaning but also constrains it, from which meaning holism results and thereby it preempts certain objections that are sometimes advanced against holistic approaches to meaning.

Now we come to the issue of a *generic ontological dependence* of the parts of the meaning system. Meaning system is holistic if and only if the following condition is satisfied by all its constituent parts: with respect to the instantiation of the family of properties discussed above, i.e., contextuality, subjectivity, objectivity and the integration of the three, a thing is ontologically dependent in a generic way on there actually being other things together with which it is arranged in such a way that there is a meaning system. In other words, whether or not meaning system is holistic is relative to the family properties, and ontological dependence relates to individuals in so far they instantiate some properties that belong to such a family of properties. The family of properties, i.e., contextuality, subjectivity, objectivity and the integration of the three, is holistic essentially; they not only make an individual meaning that has them a constituent part of the meaning system, but also make all the constituents of the system ontologically dependent on each other. That is, anything that has the family of qualitative properties has to be dependent on others that have these properties. Thus we can claim that meaning system is holistic and meaning holism holds.

4. Connection between meaning holism and epistemological holism

From the above discussion, it is safe for us to come to the conclusion that both epistemological holism and meaning holism can be expounded and proved independent of each other. Thus it is not right to claim that meaning holism is derived from epistemological holism (Quine, etc) and also we need not have the problem: meaning holism is absurd and epistemological holism is true; but meaning holism seems to follow epistemological holism (Cozzo, 2002: 26).

However, there is indeed a connection between meaning holism and epistemological holism, as Cozzo (2002: 28) observed. For Cozzo, meaning and epistemic value are connected in two ways. Firstly: in order to understand (to give meaning to) an expression E, one has to attach to E at least some epistemic properties. Secondly: if the meaning of E changes, then at least some

epistemic property of E will change too. The reason for the first is the overwhelming inclination to think that a speaker does not understand E, if she has absolutely no idea about the way in which the expression E can be used in epistemic processes, and does not know anything about the use of E in inferences, or about the assertability of sentences containing E in sensory circumstances. The reason for the second way is that a meaning-change without any epistemic difference would be irrelevant (it might be a change in tone, which we may put aside).

Some theories of meaning indeed support the connection between meaning and epistemic value. The logical empiricists' verificationism regards the sense experience or empirical content as the only meaning-constitutive evidence. Dummett's (1998) justification theory of meaning explains the meaning of a sentence in terms of justifications containing both linguistic and sensory evidence in different proportions. Inferential role semantics held by philosophers such as Harman (1982), Field (1977), Block (1986) and Brandom (1994) identifies meaning with inferential role or conceptual role or in more general terms, with epistemic use. Truth-conditional semantics held by philosophers like Frege holds that to understand a sentence is to know its truth condition; they agree that knowledge of truth conditions should be somehow, perhaps partially, manifested in some epistemic use of sentences. In short, many would consider that there is a connection between meaning and epistemic value.

It is worth emphasizing, however, that the connection between meaning and epistemic value does not imply that all meaning-properties are epistemic properties, nor that all epistemic properties are meaning-properties; this can be proved by the different families of qualitative properties possessed by the individual parts of epistemic system in Section 4 and meaning system discussed in Section 5. Epistemic value is just one dimension of meaning system which also deploys at the same time its social, phenomenological and biological dimensions (Cornejo, 2008), thus it is not plausible to claim that meaning holism is derived from epistemological holism.

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