

ORIGINAL ARTICLE

Gongsun Longzi's "form": Minimal word meaning

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Abstract: Inspired by Gongsun Longzi's "form-naming" idea about word meaning, this paper argues that 1) the internal lexicon contains only the list of word-meaning pairs, with no additional information either as part of word meaning or as a structural level above it; 2) the meaning of word is a minimal C-Form, the identifying conceptual meaning that individuates a concept; 3) C-Form is the interface between word meaning and concept meaning; and 4) a sentence has a minimal semantic content, consisting of the minimal meanings of the words composing it, which is propositional and truth-evaluable, and contextual elements contribute nothing to the meaning of language expressions. This paper adheres to semantic minimalism, believing meanwhile that meaning holism helps in semantics inquiry, since reflection on language meaning differs from language meaning itself.

Keywords: Gongsun Longzi; semantic minimalism; word meaning; meaning holism

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1. Introduction

The basic theoretical tenet of semantic minimalism is that a sentence of a natural language has a minimal truth-evaluable semantic content formed by the principle of compositionality. "The meaning of a sentence is exhausted by its syntactically represented parts" (Borg, 2012: 143). It is necessary, then, that all the words that occur in the sentence must have each its own minimal meaning. For this reason, minimalists hold, first, that the meaning of a word is atomic and cross-contextually invariable so that a token of a word type makes the same contribution to the meaning of a phrase or sentence it is in, and second, that the meaning of a word is referential, or about the world (ibid.: 143–144).

However, semantic holism appears to be a theoretical barrier. There are different expressions of semantic holism, but in general they share what is formulated by the entry in *Dictionary of Western Philosophy*:

[Semantic holism] Also called meaning holism, the view that meaning is holistic rather than atomistic. The unit of meaning is not the word or the sentence, but rather

the theory or language of which the word or sentence is a component. The meaning of an expression lies in its relations with other expressions of the language in which it is embedded. It is nonsense to speak of a linguistic component abstracted from the linguistic whole to which it belongs. (Bunin and Yu, 2001: 914)

So, one cannot make sense of the word dog, unless one also knows, as the precondition, the meanings of *domesticated*, *animal*, *pet*, to name just a few of potentially many others (*carnivorous*, *mammal*, *of the same species as wolf*, etc.). These descriptions are themselves concepts expressed by words whose meanings depend on still many other words or phrases, such as *having life*, *antonym of being wild*, *weapon-prey*, *biological taxonomy* and so on and so forth until probably all the words of a language are mobilized for the interpretation. To grasp the meaning of the verb *buy*, one must have at least a conceptual script that involves the roles of buyer, seller, commodity, price, tax, receipt, mall, bargain (probably), etc. Or at the very least, to know the meaning of *sibling*, one has to assume there being more than one child born of the same parents. In a nutshell, conceptual meanings are rich and complex as the semantic contents of words and atomism has to be rejected.

To meet the challenge, the minimalists can take the strategy of showing that semantic holism may lead to absurd theoretical consequences and atomism is a better choice in explaining language meaning, as Fodor and Lepore (1993) did, or they can admit the complexity of conceptual meaning, but insist that words must have their minimal meanings. Borg (2012) proposes the acceptance of organizational lexical semantics (OLS), the main idea of which is, to the effect, that the lexical items may have complex additional information, but in the internal lexicon the additional information “does not constitute the meaning of a word nor does it impose any conditions on the possession of that word’s meaning, instead it imposes constraints on our competence with the word” (ibid.: 193). The additional information is set up as an organizing structure of the internal lexicon above and beyond the word-meaning pair list, whose job it is to group the listed words into different categories (ibid.: 194).

It is certainly important to separate the word meaning from the additional information, but it may be problem-inviting to locate the additional information in the internal lexicon. The danger is that this may well lead to a theoretical sliding into meaning holism, which is exactly what minimalism opposes. To avoid the danger, this paper suggests removing the additional information from the internal lexicon and let the information be part of the system of thought, or a Quinean web of beliefs that an individual has about what things are and how they operate in the world. Besides, minimalists would have to explain what word meaning is and how word meaning can be learnt. So far, there is not yet a satisfactory answer. It is right to say that learning happens as the result of “our transactions with the world, which trigger the acquisition of concepts we can label” (ibid.: 195), but this has not answered the question of how learning word meaning from definition is possible.

To stand on a firmer ground, semantic minimalism would have to address the issues of what the denotation is in the “mere word-denotation pair” (ibid.) in the lexicon since it is not definition (dictionary or otherwise), and where it comes from. These issues are important because defining what literal meaning is that makes communication successful remains a “notorious problem” so far, and where the literal meaning comes from is thus far above the minimalists’ worries (Kawczynski, 2017). That is why this paper is written. In the following sections, this paper begins from a discussion on some questions on Borg’s idea, and then goes on to discuss what the minimal word

meaning is, based on a head-starting idea of ancient Chinese philosopher Gongsun Longzi's, and finally comes to our proposal concerning the minimal word meaning and related discussions. In the following text, capitalization is used to mark concept or word meaning, while italicization, the word form.

2. Reconciling Holism and Minimalism

OLS is adopted to deal with the issue of lexical complexity; i.e. as Borg's example shows, it seems obvious that the possession of the concept BACHELOR requires as the precondition the possession of the concept UNMARRIED, or that knowing the meaning of DOG requires as the precondition knowing the meaning of ANIMAL. Borg's strategy is to weaken the role of such preconditions by rejecting them as constitutive semantic features of the lexical meaning *per se*, but granting them an organizational role of categorizing words in the lexicon. Thus, features such as +ANIMATE and +AGENT are not part of the meaning of a noun like *dog*, but just indicators that the noun *dog* belongs to a category; or +MANNER OF MOTION and +CONTACT function to group verbs *hit*, *kick*, *chop* into one category, though the two features are not part of the meaning of any of the three verbs. The important point is that the word meaning is separated from the other semantic features traditionally believed in semantics to be part of the definitional meaning of a word. In this way, semantic atomism is kept without robbing the concept of its content. This is well justified, since "facts about the world [are] not facts about our language". (Borg, 2012: 200) However, to keep the additional information in the internal lexicon entails certain difficulties.

The first problem with OLS is that if the additional information, essentially semantic features, remains in the lexicon, it is not successful in defending semantic atomism. OLS sets up a super-ordinate level where the semantic features categorize words instead of being a part of the meaning of words in the pair list of the lexicon. If so, the issue of lexical complexity still remains. For OLS still assumes that to know that a word falls into certain category means to know the semantic features that go with the word. For instance, to know which category the word *boy* falls into requires, as precondition, knowing the features of +ANIMATE, +HUMAN, +YOUNG, and/or +AGENT (if the word *boy* serves as the subject of an active affirmative sentence) and so on. This is not much different from the decompositional theory of meaning. What is more, the matter can be even more complicated. The word *girl* may fall into the same category as *boy*, if a category, say CHILD, has the features of +ANIMATE, +HUMAN, +YOUNG, but a girl is certainly not a boy and therefore another semantic feature, namely SEX, is necessary to shovel *boy* and *girl* into different categories of MALE and FEMALE respectively. The additional information thus programmed is not just a device of competence constraint, but as a structural part of the lexicon these semantic features indirectly (categorically) define the meaning of words. This means in effect that to know the meaning of a word, one must also possess the additional information as precondition, a thesis which OLS sets out to reject. More seriously, these features are themselves meanings, which in turn must have their own super-ordinate additional information level. If this is the case, OLS slides into meaning holism unavoidably.

The second problem with OLS is the same as that we may question the definitional theory of meaning: if the meaning of a word is defined by, therefore composed of, the semantic features, how many features should we list in order to complete a word's meaning? If, say, +ANIMAL is

a semantic feature of the meaning of *dog*, what about PET, BOW-WOW, DOMESTICATED and so on? And if +AGENT is also a feature, what about +INSTRUMENTAL, or +RECIPIENT? Would +COUNTABLE, –MATERIAL and other syntax features also be there? The features can be enumerated almost endlessly. The same question can be asked about the additional information structure of OLS, even though it actually sums up, or generalizes, in a tidy way the originally word-bound features into a level above and beyond the word pair list. Just how many pieces of such additional information must the organized structure contain in order that all the words in the lexicon can be located appropriately in different categories? How many categories must there be, such as case of *boy* and *girl* mentioned above imply? What kind of category would the meaning expressed by *wild-dog* fall into? This indicates that the content of the organizational structure cannot be easily determined. If we specify certain limited features to be in the structure, that would be virtually the same as giving definitions to the meanings of words in the lexicon, resulting in supporting definitional theory of meaning; but if the number of features cannot be specified, then the content of structure can be astronomical in size and complicated in its internal relationships, resulting in adopting meaning holism.

The issue of learning the meaning of a word by definition is also a problem. Borg (2012: 195) realizes this issue, but states just curtly, following J. Fodor, that word meanings are not learnt, nor are they innate at birth, but “acquired through our transactions with the world, which trigger the acquisition of concepts we can label”. This, however, is not enough, because word learning by definition is a fact, which cries out for an explanation as to why it is possible. To be sure, as mentioned above, one doesn’t have to know the meaning of either ANIMAL or PET prior to knowing the meaning of, or using, the word *dog*, but it actually happens that one can learn to use the word *dog* by being told that it is a kind of pet animal that bow-wows. Word meaning is not innate at birth, but if it is acquired through our interaction with the world which is a process of concept forming and labeling (and we agree with Borg that it is), then this process simply cannot happen in the internal lexicon, because the organizing structure contains semantic features that are part of concepts already formed. Or else, whose features would they be of? But if we put concepts with their full content into the lexicon, we are already advocating holism. So this paper holds that if semantic atomism would hold its ground, an explanation must be given of how learning word meaning by definition is possible. Such an explanation cannot be given without incurring theoretical trouble of holism, if the additional information, which are semantic features in essence, remains in the internal lexicon.

For these reasons, we suggest removing the additional information structure from the internal lexicon, regarding the information as part of the general conceptual or cognitive system. This is reasonable because if the additional information adds to the meaning of a word and functions to impose constraints on the competence with the word, there is no reason why all the other information in the knowledge repertoire, or the web of beliefs, an individual possesses about the world would not do the same job. If +ANIMAL adds to the meaning of and constrains the competence with the word *dog*, so do many other associations, such as +PET, +TRAINED FOR HUNTING, +LOYALTY, to name just three. Indeed, such additional information helps the individual who uses the word *dog* to answer questions like “What is a dog?” or to explain how a dog differs from a wolf in spite of their being highly similar in appearance, or to speculate on whether wild dogs are dogs. This postulates that the individual also knows what a pet is, what hunting

means, what a friend means and so on almost endlessly. This process is regressive until the entire web of beliefs the individual possesses may be involved.

However, it is the conceptual thought about dog that is activated by the meaning of the word *dog*, the thought that A DOG IS AN ANIMAL, A DOG IS LOYAL and so on and so forth. This does not entail that the contents of the thought compose the meaning of the word. The conceptual meanings can be rich, complex, multi-dimensional and dynamic, but the meaning of a word is a simplex. Later in this paper, we shall elaborate on this topic, but here we want to emphasize that meaning holism and semantic minimalism are not conflicting with each other. This is not only a matter of compatibility between the basic theses of the two theories (Cf. Kawczynski, 2017). More critically, they are two theories for different purposes: meaning holism is an epistemological theory exploring the content, structure and function of the mind, concept or thought, while semantic minimalism is a theory of philosophy of language concerned with the form and meaning of words or sentences as well as the role of language in human communication. Just as Borg (2012: 201) says, facts about dog are not facts about the word *dog*. The “facts” here does not merely denote actualities out there, but should refer more essentially to our conceptualization and interpretation of the actualities. A rose at the door can be an objective fact, but that the rose is red and fresh, that it is from someone, that it symbolizes love and so on are our mental facts, which may vary from individual to individual (in some places, people eat deep-fried rose petals, for whom it may conjure up the mental fact of the rose being eatable).

Viewed this way, minimalism does not need to stand in opposition to holism at all. Indeed, minimalist accepts that “a semantic theory is a small part of what one needs to know to operate successfully within the world” (Borg, 2012: 201). In other words, language meaning is a small part of our knowledge about the world in general. Fodor (2008: 198) says, “the semantics of thought is prior to the semantics of language”. This means for the present topic of this paper that 1) concept meaning and word meaning are two different but related analyses and 2) the minimal word meaning comes from concept meaning. Minimalism can accept holism as the meaning theory of conceptual thought while insisting on the minimal word meaning. This does not mean that the issue of minimal word meaning is trivial or that word meaning must be grounded on holism; what needs to explore is the relationship between conceptual meaning and word meaning.

3. Gongsun Longzi’s word meaning: a conceptual form

Our solution to the problem we have in hand is not complex: with the inspiration from Gongsun Longzi’s idea on word meaning, we propose what the minimal meaning of word is and how it is related with concept, or conceptual thought. This is a heavy job, but we can manage if we focus primarily on word meaning. For this reason, we’d like to make a claim before we go on, that this paper treats thought and knowledge, concept and conception altogether as the content or mechanism of the cognition, or conceptual, system, realizing meanwhile that these are certainly different issues. Surely, an individual may have the knowledge that WATER IS H₂O without thinking about H₂O whenever she uses the word *water*; or one may have the concept of DOG with a conception of it, say as dirty animal with fleas, very different from that of another person, say as a pet. The reason why we decide to lump these issues together is that 1) thought, knowledge, concept, etc., are themselves big questions philosophically or scientifically which have not been satisfactorily answered and it is

beyond a mere essay like this to talk about what they are, and therefore 2) it suffices for our present topic to treat them as something different from the meaning of language word, just for the sake of convenience of discussion.

Now let's return to our topic of what the denotation is, if the internal lexicon contains a list of word-denotation pairs, or word-meaning pairs. Our idea is started by Gongsun Longzi, an ancient Chinese thinker of over 2,500 years ago, whose famous propositions include "*A chicken has three feet*", "*The hard, the white and the stone are two things*", "*White-horse is not horse*" among others. These traditionally mislabeled "sophistic" propositions are in fact Gongsun's rationalistic speculation on word meaning¹. For instance, by saying "*A chicken has three feet*", Gongsun is arguing for the necessity to distinguish two different facts, the empirical fact that a chicken has two feet and the mental fact that the concept of CHICKEN-FOOT is the meaning of the word *chicken foot*. He had to do so at the time when there was no word for CONCEPT. Gongsun might well have been the first thinker in the intellectual history of China to be aware of the issue of concept, however rudimentary his idea about concept might be.

This is further witnessed by his distinction of the knowledge that the mind grasps from that of sensory experiences. In his essay, entitled *On Hardness and Whiteness*, Gongsun argues that the perceptual experiences with specific things out there produce only preliminary unreliable knowledge, and only what the mind extracts from the perceptual experiences can be the true knowledge. By saying "*the hard, the white and the stone are two things*", he emphasizes the hard and the white as the true knowledge that the mind extracts, the hard being not the property of a stone but that which makes a thing hard. The same is true of the white. Just as the meaning of *stone* is STONE, a conceptual entity, the meaning of *hard* and *white* are HARD and WHITE, conceptual entities independent of STONE or anything else.

His famous "sophistic" statement of "*White-horse is not horse*" should be understood in the same way. With this, he attempts to show that the meaning of a word is a conceptual entity instead of being directly linked with an actual object, as ordinary people understand it. His strategy is to argue that as an empirical fact, horses existing out there do have colors, white, brown, black, etc., but as a concept, HORSE is colorless. The word horse names the form (of HORSE) and white the color (of WHITE). He says, "*Horse' is what we use to name a form*", in which the *form* is not the empirically perceivable appearance or shape of a horse but the conceptual form of HORSE. What names a color cannot name a form, nor vice versa, because the form (HORSE) does not require any color (WHITE) to be one of its meaning features; nor does the color depend on any form for its meaning. As to the compound name such as *white horse*, Gongsun chooses to regard it as denoting the form of WHITE-HORSE, another form independent of both HORSE and WHITE.

The key word here is "form". On the one hand, his form is similar to Plato's Idea in that it is the abstracted idea that the mind grasps of a category of objects, but unlike Plato, Gongsun does not grant his form any realistic existence. Instead his form remains a mental conceptual entity constituting the meaning of a word. On the other hand, his form also resembles Fodor's concept, or LOT word (Fodor, 2008), in that it is the atomic representation of a category of external objects. However, while Fodor is concerned with the whole informational representation caused by external

1. Elsewhere we have given our reasons why these propositions should be retranslated and reinterpreted and limited by space we can't reiterate them here. Interested readers could refer to the Chinese-English bilingual works by Liu (2015).

objects, Gongsun proposes his form as a meaning radical that a word names, which is just a conceptual form with no other informational content. For instance, the STONE is a pure conceptual form without hardness or whiteness as its meaning components. The same is true of HORSE. No information about what is known about horses constitutes the meaning of HORSE. A horse runs fast, a horse hisses, a horse has a color, a horse is a herbivorous animal, etc., these may all be true empirically, but none of them contributes to the meaning of HORSE, a pure conceptual form in the mind. This is true also of adjectives. The word *white* names the color form of WHITE and the word *hard* the form of HARD. But neither WHITE nor HARD denotes the property of any specific thing. WHITE or HARD is just that which makes a thing white or hard, grasped only by the mind. They are themselves atomic conceptual meanings that contain no further analyzable information. Gongsun has not talked about verbs, but along his line of thought we believe he would agree that the meaning of a verb is also a conceptual entity of what the mind grasps about an action, a state of affairs, etc. For instance, verbs like *kill*, *is ready*, etc., would name the atomic conceptual forms of KILL, IS READY, etc. There may be different ways of killing with or without tools in different situations, but none of these kinds of information is part of the conceptual meaning of KILL. The same is true of IS READY. Information about who is ready to do what, or for what, contributes no meaning to the conceptual form of IS READY, which is just what the mind grasps of the state of readiness.

To sum up, Gongsun has proposed three points concerning word meaning. 1) A word is a right name for an actuality only if its meaning is the true knowledge about the actuality, extracted from the perceptual experience of it. 2) The true knowledge is a conceptual entity in the mind and this is true not only of nouns, but also of adjectives. 3) The conceptual entity as the meaning of a word is self-complete and simple, with no other meanings or associations as its content. The third point can be rephrased this way: the meaning of a word is an atomic conceptual form. Let's name such a form "C-Form".²

However, there is a serious mistake in Gongsun's theory: the confusion of knowledge about an actuality and the C-Form paired with the word that is applied to the actuality. In other words, his theory regards C-Form and concept as equals, which renders his theory vulnerable. First, if C-Form equals concept, the true knowledge of an actuality, then the meaning of a word cannot be atomic at all. After all, the concept of DAUGHTER postulates the concept of MOTHER, and if MOTHER is a semantic feature of the meaning of the word *daughter*, we fall into the trap of holism because MOTHER would have to be related to quite a lot of other meanings, conceptual or propositional in a web of belief. Second, with concept being equal to C-Form, one simply cannot explain many meaning facts, such as entailment, synonymy, etc., since the C-Form has to be simple with no other meaning content. For instance, why is *bachelor* synonymous with *unmarried man*? One cannot explain why "*A horse is an animal*" is true but "*A horse is a fruit*" is false, because there is no way to categorize concepts, still less the metaphorical expressions, since there is no semantic feature that provides the ground between the tenor and the vehicle. What is it that makes the sentence "*Tom is a gorilla*" comprehensible? Third, it is bound to overburden the internal lexicon, because it cannot explain the compound expressions that abound in any language. Gongsun's WHITE-HORSE as a unique C-Form offers no way-out, for that makes the internal lexicon astronomical in size, overloaded with redundancies, thus violating the principle of economy.

2. We named Gongsun's form as "sense-form" (Liu and Pan 2018), but that term might be ambiguous and so we decide to give it up.

So, if we tend to accept the C-Form as the meaning that a word is paired with, or what a word denotes, in the internal lexicon, we must reject his equating concept with C-Form. We hold that the true knowledge that the mind grasps of an actuality out there constitutes the content of the concept of that actuality, but the concept, with all its contents including what Borg refers to as additional information, is part of the system of general cognition and not of the internal lexicon. Next, let's see what our proposal is.

4. C-Form and its relation with conceptual meaning

The C-Form in our theory is the form of the concept it copies from. Elsewhere we called it a "concept fragment",³ regarding it as the part of a concept that sets it apart from the other concepts. It is true that so far we know little about what a concept is, but philosophers and scientists assume that a concept is a mental entity, which is an operational definition to make the discussions about it possible. If we regard a concept as an entity, then logically it has a form and contents. Of course, this does not mean that a concept literally has a form, but when we talk about a specific concept or judge two concepts as being different, our conception of a concept must have its ITNESS. The ITNESS of a concept separates it from the other concepts, even if the ITNESS is content-free, i.e., carries no further information about the concept. This ITNESS proposal of ours may find support in Prinz's idea, according to which concepts are proxytypes that represent a category (Prinz, 2002: 149). The interesting point of his idea to our theory is that his proxytypes are "bound shape representations" and his idea that tokening a proxytype in thinking is a simulation of the manipulation of real objects (ibid.: 150). If this is the case, proxytypes are clearly individuated mental entities. In other words, a concept, acting as a proxy in thinking process, is a mental object with its ITNESS which identifies the concept as itself.

The C-Form that we propose is not analogous to a filename in a computer, by clicking which the entire file can be loaded into memory, because a filename may have nothing to do with the content. C-Form is the very ITNESS of a concept. Nor is our C-Form a mere label of a concept. A label can be arbitrary, but C-Form is not arbitrary at all, being the identifying information of a concept. In fact, it is C-Form that is to be labeled by word (sound pattern or written shape); i.e., it is the pairing of a word with a C-Form that is arbitrary. It is reasonable to suppose that C-Form is the identifying information of a concept. This is because one may have a mere C-Form with no other information in the mind. H. Putnam (1999) admits that he cannot tell an elm from a beech, but he is sure he means ELM by *elm* and BEECH by *beech*. He uses this to illustrate his semantic externalism, but this example of his shows that he has the concept of ELM which he knows differs from that of BEECH, but these two concepts in his mind are practically content-free, i.e., they are just C-Forms of ELM and BEECH. Similarly, the authors of this paper have the C-Form of QUANTUM only (both having shied away from physics), knowing virtually nothing about quantum other than that it is different from, say force, magnetism, and so on. The C-Form we propose resembles more a young child's or an animal's concept WATER than Homer's concept WATER, both of which are employed by Fodor (1998: 156) to argue for his information atomism, to whom there is no difference since they all have the concepts "locked to water via its familiar phenomenological properties". But to us, there is a big difference. For Homer, his concept WATER might have been associated with additional properties

3. That paper is in Chinese, but space does not allow us to reiterate the ideas. Interested readers can refer to Liu & Pan (2018).

such as IS WET, QUENCHES THIRST and FIRE, FLOWS ALWAYS DOWNWARD and so on, which are parts of the informational content of his concept WATER, though such information is not what Homer conveys by *water* when he uses the word. Similarly, a young child may just know WATER can be applied to water in the sense that she is able to lock word *water* to water, but her concept WATER may well lack all the other associative information that Homer's concept WATER has, because she may simply not have any idea what WET, THIRST, FIRE or FLOWS DOWNWARD, etc., are. In this sense, the young child has only a C-Form WATER; or rather, a child's concept WATER is much the same as Homer's C-Form WATER. As to animal's concept WATER, we might guess it as similar to that of a child's, but there are key differences: 1) a child's C-Form WATER can later develop into a complex and structured concept with more information added in, i.e. it can be engineered, but there is so far no evidence that this is the case with animal's WATER; 2) a child can acquire a piece of additional information by learning, i.e. by being told that such and such is true of water, but so far no animal is known to be able to do the same. These two differences are important because it is the fact of word paired with C-Form that helps fixing the C-Form of a concept while leaving the semantic content of the concept modifiable.

Our idea is, in a nutshell, that given that concepts exist as mental entities, a C-Form is part of a concept, the part without which the concept cannot be. For instance, +ANIMAL, +RACE FAST, +HERBIVOROUS, etc., are the semantic features, or additional information, of concept HORSE, but none of these features is what makes concept HORSE be. Even +EQUINE does not necessarily make HORSE be, because donkeys, zebras, etc., are all equine. The only thing that makes HORSE an individual and independent concept is C-Form HORSE, a pure conceptual meaning with which all the other relevant semantic features, or additional information, can be associated. Conversely, a C-Form, copied to pair with a word (sound, written pattern), confirms the identity of the concept that has it, no matter how complex or simple its other semantic information is or how the content of it may change.

According to our theory, that different people have the same concept in their mind means only that they have the same C-Form of a concept, and they may well differ, sometimes radically, in terms of the content of the concept. When a child's concept WATER differs from a chemist's concept WATER which in turn may differ from a philosopher's concept WATER, it is the content and not the C-Form of the concept that differs. This is why conceptual engineering can and does happen: a concept may change in its content but its C-Form remains the same. Conceptual engineering is not a switch of topic, because the C-Form stays even though the content may have been totally replaced. Concept ATOM in physics is still ATOM, even though being indivisible is no longer an essential definitional element of the concept. Under (or within, or behind) the C-Form WOMAN, the contents are no longer just FEMALE, ADULT, HUMAN BEING, but has been tremendously enriched, or in a sense one can even say substituted, by other features, such as socio-political or socio-psychological attributes: status, gender awareness, sense of helplessness and so on (Cappelen, 2018: 13–14). However, the C-Form is still WOMAN, applicable to the same references and any discussion of WOMAN is still on the topic of women and not men. If conceptual engineering is an operation on the world (ibid.: 46), what it engineers is the content of concepts about the world and not the C-Form of concepts.

Our view resembles Fodor's informational atomism, but there is a difference. Fodor seems to be equating conceptual content with conceptual form. Of course, Fodor has not talked about a

concept having a form literally, but as a word-like mental entity, a mentalese word, his concept is individuated, just like a word in a language, and for this reason a concept must have a form. But this form contains nothing other than the atomic information that is represented of an actuality. Thus, the content and the form of a concept are the same thing, which constitutes the meaning of a word. We believe this is the major problem Fodor's informational atomism has. It cannot explain semantic categorization. Why are DOG and CAT in the same category but DOG and PENCIL in different categories? Nor can it explain concept acquisition. It does not help to just say concepts are innate, because quite a lot of concepts that an individual may have are learned, most often by definition. One may never have seen a kangaroo, but certainly can form the concept KANGAROO by being told that it is an Australian animal that hops and carries baby in the mother's belly-bag. Essential or not is not the concern, but the person now has the concept with the C-Form KANGAROO.

It is this C-Form that is copied to be the meaning of a word. A concept as a mental entity is structured with its multidimensional and complex informational contents and so cannot serve as a word meaning which has to be simple and atomic, in order that the internal lexicon can be economically a list of "mere word-denotation pair" (Borg, 2012: 193). But C-Form is the indispensable part of a concept, since it is C-Form that sets a concept apart from other concepts, while none of the other features of the content of a concept can do it. If a dog is an animal, a cat is an animal, too; or if a dog is domesticated, a horse is also domesticated. None of these semantic features (ANIMAL, DOMESTICATION) separates concept DOG from other concepts, CAT, HORSE, etc.

Our C-Form theory adopts his semantic atomism, but only in describing word meaning. If the internal lexicon contains only a list of word-denotation pairs, it is not responsible for any complex conceptual operations, such as definition, categorization and so on. However, in order for words to activate corresponding conceptual operations, or the combination of words to express certain proposition, the words in the internal lexicon cannot be just a repertoire of roots without meaning. Instead, each word must have a meaning which is derived from a corresponding concept. Further, since concepts are complex and structured but word meaning is simple and unstructured, only the concept identifying meaning can be the meaning of a word, which has to be indispensable for the concept to be an individuated mental entity. We name such a meaning "C-Form". As mentioned before, we appreciate Prinz's idea of proxytype individuation, and our C-Form can be seen as the form of an individuated proxytype. But while Prinz only grants the "proxytype individuation" to nouns (his examples of gnu-shaped, person-shaped, rifle-shaped representations), he does not think there are fat-shaped or hunt-shaped representations. Instead, he thinks FAT proxytype or HUNT proxytype are contained in simulation and meld with other proxytypes (Prinz, 2002: 150–151). Different from him, we think there are C-Forms that are copied to be the meanings of adjectives and verbs from concepts of properties or of actions and so on. It's true that the concept of a property or an action may not literally have a "shape" in Prinz' sense, but if such a concept should also be involved in thinking, or in Prinz's words "be contained in simulation", there is no reason why such a concept has to be meld with other concepts, because in so doing Prinz has already held concepts of property, relation and action as being individual proxytypes different from those of entities. Since Prinz admits that FAT or HUNT as concepts can be tokened, then whether they can be individuated by shape boundaries or not is not important. That one cannot perceive any boundary shape of what verbs or adjectives express (HUNT, FAT, etc.) does not mean that as mental entities they cannot be

attributed with some form of conceptual meaning that identifies them and sets them apart from the other concepts.

As to the match of a C-Form with a word form (sound or written), we agree with Chen (2014) that it is only a matter of social convention. Saussure is still right in regarding a word as a sign, the combination of signifier and signified, except that the signified is not a concept but a copy of the indispensable identifying form of the concept, the C-Form. In so doing, we can maintain Fodor's informational atomism but fare better in avoiding the problems that his theory faces, such as publicity, categorization, and so on. Our theory can explain why two individuals with possibly very different conceptual knowledge of a concept can communicate with each other, and for the same reason, why acquiring a concept by definition is possible. The key point is, what varies from one individual to another is the content of a concept, but what does not vary is the C-Form that a language community binds up with a word, which provides the members with the start point of language communication. Well, if everyone has the same web of beliefs, or the same informational content for each concept, what's the use of language? Language communication is necessary exactly because people differ in their conceptual knowledge or web of beliefs, but if language communication should be successful, it must make sure that people talk about the same thing, however differently they know about the thing. It is C-Form that guarantees language publicity and makes concept acquisition possible.

If our program as outlined above holds ground, which we believe it does, meaning holism and semantic minimalism are not antagonistic at all, the former being a meaning theory of thought and the latter of language expressions, though there is a close relationship between what these two theories focus on. Given this understanding, we adhere to semantic minimalism, believing meanwhile that meaning holism helps in semantics inquiry. Insistence on that words and sentences have a minimal semantic content entails neither the exclusion of further elaboration on the content, nor the inquiry into the content, because the meaning of language expressions is one thing but the reflection on the meaning is another. Surely, "semantics is essentially a theory of thought" (Fodor, 2008: 198), but there is no reason to keep semantics of thought off the reflection on language meaning. On the one hand, ordinary language users reflect on word or sentence meanings, which is why there are many phenomena, such as inference, intention-reading, ambiguity, disagreement, etc., which can be occasional, spontaneous, or idiosyncratic, but are all cognitive reasoning based on the users' web of belief. On the other, semantics as a scientific theory of meaning seeks to find out the conventions or general rules that are hidden in and constrain language use, in order to achieve a universally accepted understanding of the meaning expressed by language. It is in this sense that semantics is a science of language meaning, which in no way rules out the existence of the minimal semantic content of words and sentences composed of words. We also hold that it is in this sense that Lepore and Stone (2015) are right in pointing out that what are commonly regarded as "pragmatic" aspects of meaning (inference, intention-reading, humor, etc.) are ruled by conventions linguistically packaged. Semantics as the inquiry into language meaning can be atomistic, operating with lexical structural properties and syntactic principles, but it can also be part of thought reflection (de Almeida, 2018: 225).

5. C-Form and truth-evaluable proposition

Our argument on the topic of C-Form and truth-evaluable proposition is inspired by an essay by Qian (2015) in which he says that the conceptual meaning of a noun as the subject in a sentence is empty and must be given by the predicate; if one predicate is not enough, a sufficient but unspecified number of predicates would do the job. He takes *horse* as the example to argue that *horse* does not give the concept of HORSE. The conceptual content of HORSE is provided incrementally by predicates in sentences with *horse* as the subject, such as *a horse hisses*; *a horse is herbivorous*; *a horse is odd-toed*; *a horse races fast*; *a horse can carry heavy load*; and so on. Two questions we can ask about Qian's argument. 1) If the noun *horse* does not carry any information of concept HORSE, how can we determine what predicates can be chosen to match the subject to form a reasonably meaningful sentence? On the one hand, it is reasonable to take *odd-toed*, *animal*, etc., to be the predicate of *horse*, but it is absurd to select *turbo-charged* or *tell lies* to predicate of *horse*, since what such sentences express is semantically invalid. On the other, of the semantically valid sentences, some are said to be true while others false: predicating of *horse* with *herbivorous* is true, but with *carnivorous* is false. 2) The predicates themselves consist of verbs or adjectives or nouns that express corresponding concepts, or individuated proxytypes, of property, action, state, etc. To regard them as concepts and probe into their conceptual meanings, one might enter possibly an infinite regression of interpretation and end up accepting either holism for explaining word meaning or contextualism which claims that the meaning of words and sentences is context-sensitive and therefore can only be determined relative to specific contexts. For instance, *herbivorous* means grass-eating, which implies additional information of grass as plants, which implies in turn further assumptive information of life science and so on and so forth. Similarly, RACE is a behavior that differs from HISS, which represents a different behavioral event and all the related features of the behavior, such as its definition and thematic structure, but these can only be specified in a concrete context. Also, FAST means high in speed, but this meaning is uncertain since the criterion of speed and the scope of comparison are all missing.

However, our C-Form theory deals with the situation quite readily. First, it is true that the word *horse* cannot give the entire conceptual content of HORSE, but *horse* must have a meaning that enables it to allow some predicates to combine with it so as to form a semantically valid and true (or false) statement. That meaning is C-Form of HORSE; let's call it F-HORSE. F-HORSE is derived from concept HORSE, a copy of the conceptual form of HORSE. For this reason, F-HORSE is semantically connected with concept HORSE as a reproduction of its C-Form. We think that the function of F-HORSE as the meaning of the word *horse* is to provide semantic validity to the meaning of the sentence in which *horse* occurs as the subject and enable the sentence meaning, if valid, to be truth-evaluable. To be semantically valid simply means that the semantic content of the predicate that predicates of the subject is a piece of additional information of the concept whose C-Form is expressed by the subject. For example, if HISS is what a speaker knows about HORSE, she is most likely to say "*Horses hiss*", which to her is semantically valid and true. The speaker is highly unlikely to produce the sentence "*A horse is four-cylindereed*", which to her would be invalid semantically and so it makes no sense to judge its truth value, unless she is joking or writing for other purposes, say, telling a fairy-tale. On the other hand, the hearer would agree that "*Horses hiss*" is true if it matches what she knows about HORSE, but would be puzzled by "*A horse is four-cylindereed*" since to her knowledge, the meaning of CYLINDER cannot be applied to HORSE. This point is nothing but a common-sense. However, this point is worthwhile highlighting, because it is what lies behind concept learning by definition and the nature of a sentence meaning being truth-

evaluable. Clearly, if one knows a horse hisses without also knowing that a horse is herbivorous, the sentence “*A horse is herbivorous*” provides her with a new addition of information into her concept content, but her F-HORSE remains the same. Her concept HORSE becomes thus richer than before and she is ready to acknowledge that a horse is grass-eating is true, which she could not before. A semantically invalid statement, however, does not have this function, because no one can confirm or falsify it in any way, resulting in no new information acquired. This is the reason why we mention semantic validity in addition to truth and falsity. As to the nature of a sentence meaning being truth-evaluable, we shall have more to say soon. Here, let’s just say that a semantically valid sentence expresses a truth-evaluable proposition. “*A horse is a grass-eating animal*” and “*A horse is carnivorous*” are semantically valid and so truth-evaluable, the former being true and the latter false. To generalize, when a nominal item occurs in a sentence as the subject, it functions to form with a predicate a semantically valid sentence that expresses a minimal semantic content, or what Borg (2012: 39) calls “minimal proposition”. We shall soon say what we mean by such a minimal proposition being truth-evaluable, but before that let us answer the second question we raise.

The predicate itself consists of verbs or adjectives which are also word-meaning pairs in the internal lexicon. According to our theory, the meaning of verbs and adjectives is also the C-Form, a copy of the conceptual forms of the corresponding concepts of action or property, etc. As we argued a moment ago, Prinz appears to be hesitating as to whether there are action proxytypes or property proxytypes, but we make clear that there are. Or else, on what basis can we say an action is that action or a property is that property? KILL refers to the action of killing, regardless of instrument, manner, or other information or knowledge about killing. The important thing is that KILL as a concept differs from KISS or KEEP as concepts. They have different conceptual forms. The same is true with adjectives like RED or READY. The concept READY has the content of an agent being ready for something or to do something, which is syntax-driven informational content (Borg, 2012: 210-211), but its conceptual form is just readiness that sets READY apart from other concepts like RED. The predicate in the sentence *The students are ready* means not that the students are RED, nor that they are TALL, but that they are READY. As to what they are ready for, or what they are ready to do, these are not given by the predicate C-Form READY. Call it “F-READY”. *The students are ready* is sufficiently meaningful, so long as for the individual, her word meaning, i.e. the F-READY is the copy of the form of her concept READY with its meaning structure of READY (X, Y). Whether X is ready for an exam or is ready to eat out contribute nothing to the meaning of the sentence. In other words, the meaning of a predicate combined with that of a subject forms a sentence whose meaning is a truth-evaluable proposition. Meanwhile, just like nouns, the C-Form of either an adjective or a verb remains resistant to change, while the concept content can change. KILL with stone and rod in ancient time differs from KILL with a gun in modern time, but KILL remains the same in its conceptual form. It is this conceptual form that gives the minimal semantic content of the predicate in which an adjective or a verb occurs. The minimal meaning of the predicate and that of the subject form the sentence that expresses a truth-evaluable proposition.

We must hasten to make a point here. Certainly, facts provide the truth-condition of a proposition, but “*facts*” does not necessarily denote empirical objects or events in the immediate context of language use. Let’s think about Tarski arguing for his convention-T (Tarski, 1999), where a typical example is *The sentence “Snow is white” is true if, and only if, snow is white*. If someone says “*Snow is white*” in a situation where it is snowing and the whiteness of the snow can be seen,

then obviously it is the empirical fact that the snow is white is the condition that makes true the meaning of the sentence, or is the truth-maker of the proposition. However, when Tarski uses this as an example, he is most likely not in a snowing context; instead he is most likely at his desk. At this moment, what makes him to be sure that “*Snow is white is true*” is not any perceivable fact in the environment, but a piece of his knowledge about snow. This point is important as we see it. As authors of this paper, we know that water is H₂O and so we may say to someone: “*water is H₂O*”, or when we hear the sentence, we say that is true. This is not because we always carry devices with us so that we can always reproduce the experiment that proves that water is H₂O, but because we have this knowledge item as part of our concept WATER. In fact, we may even know nothing about how to decompose water molecules and any principles or theorems of chemistry and physics involved thereof, but we know we can count on chemists’ expertise if necessary, and so are convinced that WATER IS H₂O expresses a truth. There are cases where someone’s concept is just a C-Form without any other additional information, but in such cases the identifying conceptual meaning would still be there in the person’s mind with its content yet to be filled up. As we talked a moment ago about a young child’s early concept WATER, the child may not even have the conceptual information that water quenches fire or thirst, for she does not yet have an idea what thirst is, though when she is thirsty, she instinctively drinks water, and she is cautiously kept off fire. But undoubtedly, she has C-Form WATER, since she is aware of to what the word *water* is applied. Not only is this the case with young child, what we have mentioned previously are also cases of similar nature, such as our concept QUANTUM or Putnam’s concepts ELM and BEECH.

Now let’s come back to the truth-evaluable topic. A proposition as the meaning expressed by a sentence is truth-evaluable, or it can be judged true or false, because the evaluation is essentially dependent on the informational contents, i.e. definitional or other descriptive knowledge items, of the concept, which an individual has in mind, whose conceptual form is what the C-Form of the subject word (usually a nominal) is a copy of. The proposition of a sentence is likely to be judged valid and true, if what the predicate expresses matches an item of information or knowledge in the concept content a person possesses. Take concept HORSE for example. When HORSE contains the informational item of ANIMAL, the person judges the sentence “*Horses are animals*” to be true. But when the content of a concept lacks the corresponding information item, the case is more complex. In some cases, the person tends to judge a sentence as invalid and therefore false, if what the predicate expresses deviates far away from her knowledge of possible meanings of the concept; i.e., she would judge the proposition expressed by the sentence to be false. One is most likely to reject A HORSE IS FOUR-WHEELED as nonsensical and therefore false. However, if the predicate meaning does not deviates far, a person may judge the proposition expressed by the sentence as false, when the predicate meaning is in conflict, or incompatible, with the information she possesses as part of the content of her concept of the subject nominal. One is most likely to judge the proposition A HORSE IS A WILD ANIMAL as false, because the predicate may not be compatible with what one know so far about the subject HORSE. And if the meaning of a predicate presents something that a person is unfamiliar with, given her knowledge of any concepts in her mind, she would find it hard to judge. She may just ask about what the predicate means. This is important because it is in such a case that new item of information may be added into her existing content of a concept. A HORSE IS HERBIVOROUS. What does *herbivorous* mean? Well, it means GRASS-EATING for short. All right, now she knows that horses eat grass, which becomes a new item of information added into her concept HORSE. This is not just a speculation. It is an empirical fact

that all of us do not have the same contents of the concept. A zoologist specialized in horse study has her concept HORSE with its content enriched by intellectual information, such as its biological definition, anatomic category and so on, but a horse-racing gambler's concept HORSE probably lacks any of such knowledge information items. And it is highly likely that a horse owner knows that a horse is grass-eating, but hesitates when he hears the sentence *A horse is herbivorous*, unless he knows that *herbivorous* is roughly synonymous with *grass-eating*.

The moral is, a speaker predicates of a subject (e.g. *horse*) by using the words with C-Forms that her concept contents already possess, unless she is joking or talking nonsense. The sentence thus formed expresses a proposition which is truth-evaluable in the sense that it is always true to the speaker at the time she utters the sentence, but can be either true or false to the hearer who has her own information for making her truth evaluation about what she hears. In other words, what a sentence expresses is always a truth-evaluable proposition, regardless of the contexts of its use.

However, we are not proposing that the truth condition of a proposition has nothing to do with the external facts of the world. After all, the concepts that we form, together with their contents, come ultimately from our empirical experiences, i.e. our interactions with the world out there. As Prinz says, "Nothing is in the intellect that is not first in the senses. ... All (human) concepts are copies or combinations of copies of perceptual representations" (Prinz, 2002: 106-108). The issue of concept is not our topic here, and we accept Prinz's idea about it to keep our theory consistent with the truth condition theory of meaning. What we propose here is that the minimal semantic content of a sentence with its subject, a word paired with its C-Form, matched by its predicate, also words paired with their C-Forms, is a proposition that is truth-evaluable by conceptual informational facts which are ultimately derived from empirical facts. Most likely, Tarski knows from his experiences with snow that it is white and SNOW IS WHITE is represented in his mind. When he writes "The sentence '*Snow is white*' is true if, and only if, *snow is white*", he is well-justified to take his belief SNOW IS WHITE as representing a true fact of snow, even though at the moment he is not in the context in which he sees any snow. In most cases, this logic expression of his is used to explain or comment on his convention-T (in philosophy class, for instance) and all users would say that the "*snow is white*" on the right side of the bi-conditional notation is the metalanguage translation of the sentence "*Snow is white*", asserting it as the empirical fact that makes the sentence true. But when the users say so, they are not in the context in which snow is there and white. Most probably, they even know for sure that snow is actually colorless, the whiteness that humans perceive is simple a reflection of the sunlight of all visible wavelengths.

So, it is the belief, the knowledge item, that enables one to judge the truth value of the semantic content of, or the proposition expressed by, a sentence, even though the belief is ultimately a representation of certain empirical fact experienced, or of what is told by others about such an empirical fact. With this understanding, we can say with confidence that the context, with the specific facts therein, is not necessary for the minimal semantic content of a sentence to be truth-evaluable. In other words, the semantic content of sentence does not need to appeal to pragmatics whose job is but the fixing and identification of specific references (Borg, 2012: 134). As Lepore and Stone (2015: 94) say, "Pragmatics merely disambiguates." But as we see it, even the disambiguation must be semantically guided, i.e. one has to know first whether or not the C-Forms that compose the sentence meaning are correctly applicable to the external objects or events that are taken to be the evidence for disambiguation.

6. Coda: A by-product of our analysis

Our argument looks a bit too tedious because to us it is important. Thoughts, concepts, propositions, etc., are mental possessions or processes in individual mind, but language meaning has to be public. This paper sets out to speculate on what the minimal semantic content of a word is, intending to clarify some ideas which we have already published but find them vulnerable. The authors are basically linguists who feel uncomfortable with contextualism, which, to us, makes semantics unnecessary, or worse, impossible, for if the meanings of words and sentences are context-sensitive and for this reason relativistic, it makes no sense to attempt to construct a universal meaning theory of language. The reason is simple: if contextualism were right, language meaning would be ephemeral and public-exclusive; i.e., only the participants on the spot of speech at a given time in a specific situation could understand the meaning which no one else could and would cease to be meaningful once the situation and the time were different for the same participants. For this reason, the consequence of contextualism is theoretically disastrous. This is why we write to discuss the minimal semantic content of word, as we deem this a topic insufficiently explored with no satisfactorily convincing ideas, when greater efforts on the part of minimalists are exercised on sentences and their propositional meaning. Our start-point is the possible reconciliation of minimalism with holism.

We believe our paper has achieved its purpose. If our model of C-Form copy is right, we can not only shrug off the problems that OLS faces, but also answer questions such as concept acquisition and word meaning learning. Indeed, in our proposal, what we learn about (traditionally conceived as) word meaning through definition is not the meaning of word, but the content of the concept that word meaning activates. What is more, we can also support the proposal of Lepore and Stone that the commonly assumed pragmatic processes are pre-packaged linguistically. Further, while they believe that only the meaning of metaphors and other non-literal meanings are not conventional but is left free for imagination, we can say that even the metaphorical meaning can be semantically analyzed, if we distinguish the cognitive content of concept from the C-Form meaning of word, the former being epistemological but the latter linguistic.

With the discussion going on, we have turned up with a by-product: our argument for the minimal semantic content of a sentence as truth-evaluable proposition. We believe this by-product is of reference value to the theory of semantic minimalism, according to which the minimal semantic content of a sentence is a truth-evaluable proposition. Our discussion backs the minimalist theory: the minimal meanings of words arranged according grammar rules produce the minimal meaning of a sentence. But it is here that minimalist theory is attacked vehemently, especially by contextualism that links sentence meaning to a fact in an immediate context. Contextualism might appear to be reasonable, if truth condition consists only of empirical facts immediately perceivable. If contextualism were right, it would be indeed hard, if not impossible, to determine the reference (entity, property, relation and so on) of any words that compose a sentence that supposedly expresses a trans-contextual but truth-evaluable semantic content, and sentences could only deliver a fragment of meaning which should be expanded or narrowed in a concrete context of speech (Borg, 2012: 150). This caused a lot of trouble to minimalism, but the defense on the part of the minimalists is not really powerful (Ye, 2017). The problem lies not only with what a proposition is, but also with what constitutes the truth condition. Ye (2017: 62) thinks that the minimalists had better be satisfied

with Tarskian disquotational interpretation of truth condition in regard to the possibility of concept, but he has explained neither what “possibility of concept” means, nor why disquotational truth-condition is feasible. Our theory does it. If we reconcile epistemological holism with semantic minimalism, as we have been doing, we can find a way-out. A proposition is the meaning that a sentence expresses, with contributions from the C-Form meanings of its component words. Such a proposition is truth-evaluable and its truth condition is not contributed pragmatically, i.e., by external facts in the immediate environment of language use, but is contributed semantically, i.e., by conceptual items and their information about external facts. It is so because a C-Form of a concept that is copied to pair with a word is a natural bound with the concept which is semantically rich and structured, serving for this reason as the interface between word meaning and concept meaning. In this way, we insist on semantic minimalism without worrying about the enormous complexity of conceptual meaning, such as holism reveals. Wittgenstein is simply wrong: the meaning of a word is not its use in a language. The word *slab* means SLAB whatever language games an individual is playing (in English), so long as the English-speaking public links by convention C-Form SLAB with the word shaped *slab*. Make-shift change of the concept SLAB among a specific few in specific contexts (such as spy group agrees to use *slab* to mean some secret) is possible, but this cannot engineer the concept of SLAB unless it is accepted by the general public and becomes a new convention of word-C-Form pair. Contextualism can thus be rejected; whatever the context is, the literal representation lingers (de Almeida, 2018: 225). Our trick is simple: based on a distinction of the general meaning of thought and the semantic content of language expressions, we let OLS’s additional information be part of general knowledge or cognition, leaving the internal lexicon to be a list of word-C-Form pairs, so that semantics is a reflection on word meaning (or in a larger sense, language meaning) instead of being itself part of the content of word meaning (or of language expressions).

Author contributions

LL conceptualized the research and drafted the paper. QH provided constructive suggestions for the study and revised the paper.

Conflict of interest

No conflict of interest was reported by the authors.

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