EXPLORING SEMANTICS AND COGNITION: EAST-WEST PERSPECTIVES

Remya. C*

Abstract: This paper delves into the nuanced interplay between semantics and cognition from the Eastern and Western philosophical traditions, explicitly focusing on the insights provided by Cognitive Science and the rich tapestry of Indian Philosophy. This study examines the multifaceted nature of meaning and understanding by juxtaposing these diverse perspectives. Drawing from Cognitive Science, the paper explores both the computational and the embodied theories of meaning and understanding. While the former approach emphasizes the role of symbol manipulation and information processing in cognition, the latter emphasizes the importance of embodiment, metaphorical thought, and cultural context in cognition. Further, the paper examines the unique insights on meaning and cognition given by the various schools of Indian Philosophy like Nyaya, Mimãmsa, Buddhism, and the Grammarian school. It compares their views with Western thought, holistically exploring meaning and understanding.

Introduction

In exploring meaning and cognition, the intersection between the Eastern and Western philosophical traditions offers a plethora of theories through which one can analyze the complexities of human cognition. Cognitive Science, rooted in Western analytical thought, has revolutionized our understanding of cognition by employing empirical methodologies to investigate the mechanisms underlying human thought and knowledge. Within Cognitive Science itself, we see diverse theories of meaning. The computational theory endorsed by the first-generation cognitive scientists can be compared to the theories of meaning proposed by the realist schools of Indian tradition, who put forth the representational theory of meaning. In contrast, second-generation cognitive scientists, with their shift towards cognition as enactive and embodied, share commonalities with the Buddhist tradition, where cognition is nonconceptual and phenomenal. Through a comparative and cross-cultural inquiry, the rest of the paper tries to engage the reader in having a deeper understanding of the complexities of human cognition through a more holistic approach to studying semantics and cognition.

Theories of meaning in Cognitive Science refer to the study of how meaning is represented, processed, and understood within the human mind. This encompasses various aspects of language and cognition, including how words and symbols acquire meaning, how meanings are combined to form complex structures, and how meaning is interpreted and understood in specific contexts. Early cognitive scientists believed that linguistic expressions derive meaning from their syntactic and semantic relationships within a formal system. This view became the central thesis behind the computational theory of meaning upheld by first-generation cognitive scientists. In contrast to this, as already mentioned, the second-generation cognitive scientists held a more pragmatic approach where they looked at the meaning of expressions as context-dependent and embodied in nature, thereby defying the position that the mind has any unique position in the cognitive process, unlike other parts of the body. Also, they emphasize the situatedness of the cognizing body, which contributes to the formation of meaning. Cognitive linguists proposed this theory of embodied cognition in the latter half of the 20th century. Paving

* REMYA. C, Research Scholar, Department of Philosophy, Sree Sankaracharya University of Sanskrit, Kalady. Kerala, India. Email: remyachandran89@gmail.com.

the way towards these theories, there are also connectionist models, which suggest that meaning emerges from the pattern of activation across interconnected nodes in neural networks. Here, meaning is thought to be encoded in the distributed activation patterns within a network with no central symbol manipulation or rule-based processing. However, for brevity's sake, this paper will deal with only the computational and embodied models of meaning.

I. The Computational Theory of Meaning

The Computational Theory of Meaning posits that the meaning of linguistic expressions and symbols can be understood through computational processes. It is based on the philosophical view that the mind literally is a computer, which is called the computational theory of mind (CTM). The roots of the Computational Theory of Mind can be traced back to the work of philosophers and logicians like Gottlob Frege, Alfred Whitehead, and others who laid the groundwork for formal approaches to language. Building upon this foundation, the models of computational theory gained momentum in the mid-20th century with the advent of artificial intelligence and digital computers. While early pioneers like Alan Turing, von Neuman, Warren McCulloch, and Walter Pitts framed the mind as a symbol processing system and explained neural processing as computational, the modern form of it was developed by Hilary Putnam and Jerry Fodor. Within their model of Computational theory, meaning is not inherent in words or concepts but arises from the rules and structures governing their manipulation. This view is read with an account of mental states, the Representational theory of mind. The central thesis of this theory is that intentional states, such as beliefs and desires, are relations between the thinker and the symbolic representations of the contents of the states (Horst, 2009). These representations have both syntactic and semantic properties. Still, the reasoning process is strictly based on formal language, consisting of symbols and rules. These formal languages often include the semantic rules that assign meaning to the expressions generated by the syntactic rules. In a way, the formalist program in cognitive science shows us how semantics can be tied to syntax. Jerry Fodor, in his explanation of the semantic properties of mind, claims that … " ust as public language utterances inherit their semantic properties from the thoughts of the speaker, thoughts inherit their semantic properties from the mental representations in a Language of Thought (LOT) that are among their constituents" (Horst, 2009). Accordingly, every thought of mine about a particular thing is because of the relation of that thought to the mental representation of the thing.

This formulation of CTM was indeed congenial to many researchers in Cognitive Science. For instance, Noam Chomsky introduced the cognitive revolution in linguistics by arguing that children latch to grammatical rules not by any operant conditioning, as claimed by the behaviorists, but by continuous hypothesis formation and testing. According to Fodor (Chomsky, 1975), this requires an innate language, thereby hinting at a representational theory of mind. He ascribes the systematicity and productivity of thought to the linguistic competence possessed by an individual. A systematically structured language necessarily presupposes the representational model in the computational theory of meaning. Another connection of the computational model to cognitive science is David Marr's theory of vision. Marr identifies three levels of vision, the first of which is determining what specific task a system should perform. This he called the computational level. At the other end is the implementational level, where the hardware performs the actual function. In between these two, he identifies a third level called the algorithmic level, where an algorithm appropriate to both the task specified at the computational level and the neurological functions at the physical level exist. Because

of these inner algorithms and representations, Marrs theory is closely associated with the computational model. This three-tiered model of cognition by Marr gives empirical support to the assumption in the computational model that the mind is an algorithmic symbol processor.

However, there have been criticisms of semantic properties supervening the syntactic structures. Whether syntax can fully explain semantics was a significant concern even among the proponents of CTM. Tension looms on whether the 'meaning' ascribed to mental representations can be identified with the 'meaning' of symbols. Horst argues that meaning is not just a two-place relation between inscription and its semantic value; instead, it must covertly report either (a) speaker meaning, (b) hearer interpretation, or (c) interpretation licensed by a particular linguistic convention (Horst, 2009). The so-called symbolic meaning may not always resonate with the meaning of the mental state. Another criticism is that all our cognitive abilities are computable. For example, Herbert Dreyfus (1972), in his work *What Computers Can't Do*, holds that human knowledge and competence or skill cannot be reduced to algorithms. Cognition and understanding through computation have been largely criticized by John Searle in his Chinese room thought experiment, where he says that the Turing test is no sufficient explanation to prove that a thing is thinking. Simulating linguistic competence does not guarantee understanding. This spurs the intrinsic-extrinsic debate in semantics. People like Searle hold that computational properties cannot be considered intrinsic and depend on external interpretations (Searle, 1992). Along similar lines, Chalmers says that the intentionality of mental states is intrinsic and hence cannot be accounted for in computational terms (Chalmers, 1996). Externalists, on the other hand, hold that mental content is not at least entirely in the head. For example, H2O is part of the meaning of water, regardless of whether a person is aware of it. Fodor and others justify themselves by holding on to the causal account of mental content according to which a mental representation R means S in case all R tokens reliably cause Sn, i.e., the perceptual access to cattle causes the concept of a COW. Nevertheless, the externalist clan did not take this justification well, and the radical externalists even believed that cognition was embodied and embedded.

II. Embodied Theory of Meaning

Embodied cognition theories offer an alternative perspective to address this problem. These theories emphasize the importance of the body and sensory-motor experiences in shaping cognition and meaning. According to embodied cognition, meaning is not solely a product of abstract symbols manipulated by the mind; instead, it emerges from the dynamic interplay between the body, the environment, and cognitive processes. The key feature of this idea involves exploring the mind-body and language-body connections to understand the embodied nature of linguistic meaning. Evidence from linguistics and psychology substantiates the claim that embodiment influences a) the reasons certain words and phrases express their particular meanings, and b) people's intuitions or immediate understanding of the meaning embedded in various words and phrases.

Cognitive linguistics provides substantial evidence supporting the embodied nature of meaning, drawing from various phenomena observed in language use and comprehension. Some of these include:

a. Conceptual Metaphors

Conceptual metaphors map domains of experience onto one another, highlighting underlying conceptual mappings grounded in embodied experiences. For instance, the metaphor "LOVE IS A JOURNEY" draws on our embodied understanding of movement

and progression to conceptualize relationships. Similarly, the metaphor “ANGER IS HEATED FLUID IN A CONTAINER” links the abstract concept of anger to the embodied sensation of physical heat. This example of conceptual metaphor involves understanding one domain of experience, say anger, in terms of a more concrete domain of experience, such as heated fluid in containers. There is a tight mapping according to which entities in the domain of anger correspond systematically with entities in the other domain. Research in cognitive linguistics suggests that this kind of mapping of an abstract concept to real-life experiences occurs due to recurring patterns of embodied experience (Johnson,1987; Johnson & Lakoff, 1999). Central to our understanding of the above conceptual metaphor is our embodied experience of containment. People have strong kinesthetic experiences of containment, like when they are in a room or locked in a car, etc. They may also experience the body as a container wherein things go in and out. Moreover, often under stress, the bodily fluids seem to be heated, releasing sweat. These recurring bodily experiences give rise to an experiential gestalt called the image schema, which here is containment.

b. Image schema:

Image schemas are recurring patterns of perceptual and motor experiences that underlie conceptual structures in language. Cognitive linguistics has documented several dozen image schemas pervasive throughout written and spoken language. They cover a wide range of experiential structures pervasive in experience, have internal structure, and can be metaphorically elaborated to provide our understanding of abstract domains (Gibbs& Colston, 1995). In addition to containment, there are other schemas, like path schemas, which relate to the movement from one location to another. For instance, we say, "He is on the road to success." Here success is seen as a destination, the end of the path one is currently undertaking. Similar is the case with the Source Goal Schema, which involves movement from a starting point through a path and reaching a specific goal. In the statement, “We have come a long way since our humble beginnings,” progress is metaphorically represented as movement from a starting point to a specific destination. Another striking schema is the balance schema, which involves the perception of stability. For example, the statement, “the political landscape is on a knife's edge,” represents the precarious situation engaged in politics by metaphorically relating it to the empirical experience of the danger associated with a knife. These metaphorical statements illustrate how image schemas provide conceptual frameworks that shape our understanding and expression of abstract concepts through language. By drawing upon these embodied structures, metaphorical language creates rich and nuanced meanings that resonate with our everyday experiences.

None of these instances are meant to establish that image schemas capture the complete meanings of words or phrases but only to portray their significance in generating linguistic meaning. Though there is no foolproof evidence as to whether people automatically access some image pattern whenever they are confronted with particular words, research in this direction still points towards the possible role of embodiment in linguistic understanding. Barsalou proposes a theory of perceptual symbol systems wherein embodied cognitive mechanisms support language understanding. (Barsalou, 1999) During real-world perception, individuals attend selectively to relevant aspects such as shapes, colors, and emotions. Associative brain areas represent these activations, partially reactivated without perceptual input, like when reading a story. In this way, the perceptual symbols simulate the experience of what some linguistic description refers to, thus highlighting the intertwined nature of perception, cognition, and language, emphasizing the role of embodied simulations in understanding linguistic meaning.

Juxtaposing these views with the understanding of meaning in the Indian philosophical tradition, we shall delve into the schools of Nyaya, Mimãmsa, Buddhism, and the Grammarian school.

III. Indian Theories of Meaning

There are two main approaches to studying the problem of meaning in the Indian tradition: the *khandapaksa* and the *akhandapaksa*. According to *khandapaksa*, the word is the autonomous unit of thought, and a sentence concatenates these words. While the Naiyãyikas and the Vaiyãkaranas were concerned about individual words and their nature, the Mimãmsakas engaged themselves in a study of sentences, which was in turn based on word and word meanings. However, within the *khandapakshins* who accepted the reality of words, two views existed regarding the nature of verbal comprehension of a sentence. For instance, Naiyãyikas and the Bhatta School of Mimamsa held the *abhihitãnvayavãda*, according to which syntactically related word meanings give rise to sentence meanings. These realist schools also held the representationalist theory of meaning; the mental states are identified with the representation so formed, making them syntactically grounded. Hence, these positions can be compared to the early computationalist theory of meaning and cognition.

In contrast to this, the Prabhakara school of Mimamsa accepted the *anvitãbhidanavãda* according to which the individual words have no meaning except in the context of the sentence. According to the *akhandapaksa*, advocated by the grammarian Bhartrhari, the fundamental linguistic unit is the sentence, the meaning of which is intuitively known and cannot be divided into parts. He stressed the reality of words at a pragmatic level where they are context-dependent. The logical school of Buddhism, which deals with Buddhist epistemology, believes that meaning is formed experientially. They explained this with their theory of negation, where the meaning of an entity is determined by negating its non-correlates. Also, the phenomenological experience of the perceiving being is significantly relied upon. These positions strongly favor the embodied view of cognition and meaning.

Our concern here is to understand what a word means. Do words have the power to convey meaning, and how is meaning cognized? The significative power or *sakti* is the relation between a word and its meaning. According to the Mimãmsa school, *Sakti is inherent in* words. Being the believers in the eternality of Vedas, the Mimãmsa school holds that the origin of the permanent relation that exists between a word and its meaning cannot be traced. It is the innate capacity of the words to present their meaning. This kind of natural relation between word and meaning was objected to by the Naiyãyikas, who advocated a conventional relationship between them. Realists held that if a natural relation exists between a word and its meaning, they should co-exist in reality, i.e., the word fire should cause burning, which is not the case. For them, the connection is only conventional and established by the Will of God. This permanent connection, they call *abidha*. While these views support the intrinsic theory of meaning, we also see schools where contextual factors determine the meaning of words. Kunjunni Raja quotes the Brhaddevata, which mentions that meaning is to be determined by considering the purpose to be served (artha), the subject matter under discussion (prakarana), an indication from another place (linga), propriety (acuity), the place (*desa*) and the time (*kala*).

Brartrhari, a significant figure in the grammar school, also agrees with this position. He holds that the meaning of an expression is not determined by its form but by contextual factors. According to Bhartrhari, these contextual factors determine whether a word should be taken in its primary or secondary sense. No wonder contemporary thinkers like Jan Houben likened his contributions to Cognitive linguistics. Houben aligns Bhartrhari's

concepts with Adele Goldberg's foundational assumptions in cognitive science, suggesting significant parallels. (Houben, 2003) Goldberg posits that semantics is based on the speakers' interpretation of situations rather than objective truth conditions. Bhartrhari emphasizes the discrepancy between how words are expressed in language and how they are in reality. For instance, he says there can be multivarious perceptions of the same entity concerning changing times or even perceivers. Similarly, the cognitive linguistic position that semantics and pragmatics work in a continuum while contributing to linguistic meaning fits well with Bhartrharian grammar, where he stresses how language contributes to action as well. For instance, in verse 2.312 in the second book of *Vãkyapadiya*, there is an example of a boy being asked to protect the butter from the crow.

Bhartrhari suggests that one does not need to stress again separately to protect the butter from other animals. It is understood from one's experience. As suggested, Bhartrhari's use of the primary and secondary sense of expressions can also be closely read with the central and extended sense of categorization in linguistics, where they adopt the prototypes and extensions to convey similar ideas. Regarding the functionality of language, Goldberg asserts that language primarily serves to convey meaning. Bhartrhari, too, emphasizes the semantic relevance of formal distinctions. It is evident that some kind of rapprochement can be discovered between Bhartrhari and later cognitive linguists with a shared emphasis on contextual meaning and hence embodied. However, it is pretty visible that the secondary meaning of expressions is taken into consideration here. The primary meaning for Bhartrhari is the universal sphota, which is innate to the expression as such. Bhartrhari holds that words or sentences can be considered under two aspects- as sound patterns or as meaning-bearing symbols. Linguists recognize two kinds of words: the underlying cause of articulated sounds and the other is attached to meanings. The former is the external facet of language, the sound pattern, or the prakrta dhvani, while the latter is its semantic facet or the *sphota*. This can be considered as the fundamental dichotomy between form and content. Bhartrhari emphasizes that a word has the double power to convey the idea of form and the content of an expression. Buddhists also agree with this dual power of words to express their own identity and that of what they symbolize. However, they mind it only when they become the subject of conventional relations and not during perception itself.

What constitutes the primary meaning of a word has been discussed by almost all schools of Indian philosophy. For Naiyãyikas, a word denotes a particular, connotes the universal, and stands for the shape distinguishing the certain from dissimilar things. All these three factors are present in the sense of a word, but only that sense relevant to the context is considered. According to Mimãmsakas, the primary meaning of a word is universal, an essential quality common to all particular instances, for it is impossible to understand the meaning of a word, say cow, concerning all specific cows. The particular is known through the secondary significative power of the word. For Advaita Vedanta, though there is no absolute reality, from the point of view of phenomenal reality, they accept the Mimãmsa position. Bhartrhari holds that every word, first of all, means the class of it, and later, it is superimposed on the thing that is meant. He says for all phenomenal entities there exists a *jãti* that is the universal essence and a *vykati* that is unreal and suffering changes. The meaning here is mental, which need not always posit an external object. This view is similar to that of the Vijnãnavãda school of Buddhism. While the *Mimãmsakas* and Naiyãyikas hold that the word directly references objective realities, the Buddhist logicians believe that the essence of meaning is negative. Words for them have no direct reference to objective realities. According to them, words deal with the conceptual images or the subjective constructions of the mind. There is no real connection between the word and the external objects. They posit the aloha theory, in which the word's meaning is a conceptual image whose essence negates all the counter-correlates,

e.g., the word cow means the exclusion of all that is not a cow. Instead of positing a real universal, like the *Mimãmsakas* and the *Naiyãyikas*, they posit a real particular at a given time (svalaksana). Perception without conceptualization is the source of unerring knowledge for Buddhist logicians. Kunjunni Raja says:

> For Buddhists, the external reality is not presented in the conceptual knowledge, but the volitional urge towards the real things can be created by the conceptual images because of the similarity of the mental makeup of human beings. Both the speaker and the listener have similar illusions; what they see and hear are their own mental concepts, but both think they are referring to the objective reality…..They accept the reality only of the simple, non- conceptual cognition which is absolutely free from all verbal association; this kind of indeterminate knowledge may be experienced, but cannot be directly communicated by words, since it is beyond the reach of words or concepts. (Raja, 1977)

The embodied cognitivists closely agree that conceptualization is merely a nominalistic phenomenon. As already pointed out, cognitive linguists advocate an experientialist notion of cognition, suggesting that meaningful conceptual structures arise from sources like a structured nature of bodily and social experience and from our innate capacity to project from bodily interactions and experience to abstract conceptual structures. In other words, categorization is nothing but an innate capacity to project the similarity in judgments onto the experiential objects. From this analysis, embodied cognitivism falls within the Buddhist notion of cognition, wherein conceptualization is a mere nominalistic phenomenon that cannot be considered to determine one's cognitive enterprise. To account for how words function on concepts, Dharmakirti uses the *apoha* theory. The sameness of a class of objects, he says, is constructed based on their differences from other objects, which in turn is based on the unique causal capacity of these objects. Dharmakirti's notion of concept formation underscores the intricate interplay between experience, mental dispositions, and subjective factors in constructing meaning. When we encounter objects, our interpretation of them is often influenced by our past experiences and the mental frameworks we have developed. For example, when we see something resembling fire, our past encounters with fire shape our understanding and lead us to interpret the object as "fire" based on our previous experiences.

However, Dharmakirti goes beyond mere habit or haphazard categorization, suggesting that our concept formation is purposeful and guided by specific expectations and interests. These expectations and interests serve as the context within which we construct exclusions and attribute meanings to objects. In essence, our conceptualizations are not arbitrary but are driven by underlying intentions and motivations. Dharmakirti resorts to the idea of imprints or *vãsanãs* to account for the purposiveness of the mind. He says the imprints are stored in the subliminal or implicit consciousness, known as the *ãlaya vijnãna* or storehouse consciousness. These imprints, received through previous experiences, add seeds to the storehouse consciousness, which in turn aid in distinguishing the current phenomenal form from what is already known, making it meaningful.

This emphasis on experience and disposition highlights the subjective nature of concept formation. Constructing exclusions and forming concepts involves a complex interplay between external reality and internal mental processes, ultimately highlighting the dynamic and subjective nature of meaning attribution.

Conclusion

The paper clearly explains the various theories of meaning proposed in the East and the West, showing how meaning is constructed and interpreted in multiple traditions. While

cognitive science employs empirical methods to study mental processes, their diverging models of computation and embodiment share fascinating parallels and differences with the Indian schools. The schools of Indian philosophy, with their strong metaphysical positions, offer unique epistemological views, and juxtaposing them with the West opens Pandora's box, enriching our understanding of meaning and cognition. This study also opens up avenues for interdisciplinary dialogue between the East and the West and allows us to integrate the ideas given by the two traditions.

References

1. Barsalou, Lawrence. 1999. "Perceptual Symbol Systems," *Behavioral and Brain Sciences*, 22,577–660.
2. Chalmers, David J. 1996. "Does a Rock Implement Every Finite-State Automaton?" *Synthese*, 108, 310–333.
3. Dreyfus, Hubert. 1972. *What Computers Can't Do*, New York: Harper and Row.
4. Dunne, John. 2011. "Dharmakirti's Apoha Theory of Concept Formation: Some Key Features," in *Apoha in Buddhist Nominalism and Human Cognition*, edited by M. Siderits, A. Chakravarthy, and T. Tillemans, Columbia University Press.
5. Fodor, Jerry. A. 1975. *The Language of Thought*, Harvard University Press
6. Gibbs, R. W., Jr., & Colston, H. 1995. "The Cognitive Psychological Reality of Image Schemas and Their Transformations," *Cognitive Linguistics* 6, no. 4,347–378.
7. Goldberg, Adele. 1996. "Jackendoff and Construction-based Grammar," *Cognitive Linguistics* 7, no. 1, 3-19.
8. Horst, Steven. 2009. "The Computational Theory of Mind," *Stanford Encyclopedia of Philosophy.*
9. Houben, Jan E. M. 2009. "Bhartrhari as a Cognitive Linguist," in *Bhartrhari: Language Thought and Reality, Proceedings of the International Seminar*, Delhi, December 12-14, 2003, edited by M. Chaturvedi, 523-543, Delhi: Motilal Banarasidass.
10. Johnson, Mark. 1987. *The Body in the Mind*, University of Chicago Press.
11. Kunjunni Raja, R. 1977. *Indian Theories of Meaning*, Madras: The Adyar Library and Research Centre.
12. Lakoff, G., & Johnson, M. 1999. *Philosophy in the Flesh*, Basic Books.
13. Raja, Kunjunni. 1977. *Indian Theories Of Meaning*, Madras: Adyar Library and Research Centre.