REPLY TO "COULD SIGN-BASED SEMANTICS AND EMBODIED SEMANTICS BENEFIT ONE ANOTHER?"

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Abstract: Sign-based semantics and embodied semantics are argued to be mutually beneficial to one another. However, while the body does shape our cognitive activities to a great extent, this does not entail that cognition can be reduced to sensorimotor simulation, i.e that the mind can be reduced to the body. Language itself bears testimony to this, as the mind is construed in ordinary discourse as having the incredible capacity of being free to travel beyond the limits of present time and current spatial location. Nagel has argued famously that mind is a fundamental datum of nature that the materialist version of evolutionary biology is unable to account for, as consciousness has an essentially subjective character to it, a 'what it is like for the conscious organism itself' aspect, that cannot be reduced to the matter

of which the organism is constituted. Two modern scientific developments refute the contention that the human mind can be explained as a purely material machine: quantum theory in physics and Gödel's Incompleteness Theorem in mathematics. Just because the mind works through the body does not entail that the mind can be reduced to the body.

I agree wholeheartedly with the author of this contribution that sign-based semantics and embodied semantics can be mutually beneficial to one another. However, I would not agree that my sign-based approach "shifts away from views centered on abstract and logical features of the mind and language in order to explore how and to what extent the living body, through sensorimotor and emotional interactions with its surroundings, shapes all cognitive activities, language among them." (Meuer, 2022, p. 138) To adopt this position would be to fall into an 'either/or' dichotomy, where I would see rather a 'both/and' complementarity. What I mean is that while I heartily acknowledge the fact that the body does shape our cognitive activities to a great extent, this does not entail that cognition can be reduced to sensorimotor simulation, i.e that the mind can be reduced to the body. Language itself bears testimony to this. Duffley (2019, pp. 70–71) adduces usage showing that the mind is construed in ordinary discourse as having the incredible capacity of being free to travel beyond the limits of present time and current spatial location, as illustrated by uses such as (1) and (2) below:

(1) In my mind, I am on a tropical island right now.

(2) The flowers were lovely out-of-season ones, and they took her mind back more than 30 years to the May basket in which Dick had hidden her.

Moreover, the mind can even conceive of things that do not exist in physical reality:

(3) Try to realize that those vast crowds of people who will scream with laughter at the sight of you in a swimsuit, or on seeing you jogging, skipping, enrolling at aerobics classes or even taking a brisk daily walk, exist only in your mind.

Thus the nature of the mind as attested by natural language itself demonstrates that it cannot be reduced to the purely material level, as no material entity is capable of transcending both space and time and of entertaining scenarios that have absolutely no physical reality.

There are also philosophical and scientific arguments against the reduceability of the mind to the body. Thomas Nagel (2012) has argued famously that mind is a fundamental datum of nature that the materialist version of evolutionary biology is unable to account for. Nagel maintains that consciousness has an essentially subjective character to it, a 'what it is like for the conscious organism itself' aspect, and that this cannot be reduced to the matter of which the organism is constituted. In the field of the hard sciences, American physicist Stephen Barr points to two modern scientific developments that refute the contention that the human mind can be explained as a purely material machine. The first of these is quantum theory:

> (…) for any physical system, however simple or complex, there is a master equation – called the Schrödinger equation – that describes its behavior. And the crucial point on which everything hinges is that the Schrödinger equation yields only probabilities. (…) But this immediately leads to a difficulty: there cannot always remain just probabilities; eventually there must be definite outcomes, for probabilities must be the probabilities of definite outcomes. To say, for example, there is a 60 percent chance that Jane will pass the French exam is meaningless unless at some point there is going to be a French exam on which Jane will receive a definite grade. Any mere probability must eventually stop being a mere probability and become a certainty or it has no meaning even as a probability. In quantum theory, the point at which this happens, the moment of truth, so to speak, is traditionally called the collapse of the wave function.
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> The big question is when this occurs. Consider the thought experiment again, where there was a 5% chance of the box collecting one particle and a 95% chance of it collecting none. When does the definite outcome occur in this case? One can imagine putting a mechanism in the box that registers when a particle of light has been collected by making, say, a red indicator light to go on. The answer would then seem plain: the definite outcome happens when the red light goes on (or fails to do so). But this does not really produce a

> definite outcome, for a simple reason: any mechanism one puts into the light-collecting box is just itself a physical system and is therefore described by a Schrödinger equation. And that equation yields only probabilities. In particular, it would say there is a 5% chance that the box collected a particle and that the red indicator light is on, and a 95% chance that it did not collect a particle and that the indicator light is off. No definite outcome has occurred. Both possibilities remain in play. (…)
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> Of course, it seems that when a person looks at the red light and comes to the knowledge that it is on or off, the probabilities do give way to a definite outcome, for the person knows the truth of the matter and can affirm it with certainty. And this leads to the remarkable conclusion of this long train of logic: as long as only physical structures and mechanisms are involved, however complex, their behavior is described by equations that yield only probabilities – and once a mind is involved that can make a rational judgment of fact, and thus come to knowledge, there is certainty. Therefore, such a mind cannot be just a physical structure or mechanism completely describable by the equations of physics.
> (Barr 2007, pp. 4–5)

The second is Gödel's Incompleteness Theorem, whose import for the irreduceability of the human mind to a computer Barr summarizes as follows:

> What Gödel showed, however, and rocked the mathematical world by showing, was that mathematics could not be so mechanized. In particular, he demonstrated that if one is given any consistent formal mathematical system rich enough to include ordinary arithmetic, then there exist propositions (called "Gödel propositions") that (a) can be properly stated or formulated in the symbolic language of that system, (b) cannot be proven using the mechanical symbolic manipulations of that system, and yet (c) can nevertheless be proven to be true – by going outside the system. Because the human mind can grasp the structure of the formal system and the meaning of its symbols, it is able to reason about them in ways that are not codified within that system's rules. (…)
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> The relevance of all this to computers is that all computers involve – indeed are – systems for the mechanical manipulation of strings of symbols (or "bits") carried out according to mechanical recipes called "programs" or "algorithms." Now suppose that there could be a computer program that could perform all the mental feats of which a man is capable. (In fact, such a program must be possible if each of us is in fact a computer.) Given sufficient time to study the structure of that program, a human mathematician (or group of mathematicians) could construct a "Gödel proposition" for it, namely a proposition that could not be proven by the program but that

> was nevertheless true, and – here is the crux of the matter – which could be seen to be true by the human mathematician using a form of reasoning not allowed for in the program. But this is a contradiction, since this hypothetical program was supposed to be able to do anything that the human mind can do. What follows from all this is that our minds are not just computer programs.
> (Barr 1995, pp. 2–3)

Now this does not mean that the mind is an autonomous free-floating entity disconnected from the body. The nature of human language itself indicates that this is not the case, as language involves a stable and intimate association between a bodily-produced sign and a mentally-engendered meaning. This shows that the mind needs to connect its ideas to something bodily so as to be able to communicate them to other people, a fact that places important constraints on the ideas associated with linguistic signs: if the latter are to serve the purposes of communication, the meanings linked to them cannot be merely personal and idiosyncratic, but must conform to the way the other speakers in the linguistic community conceptualize things. However, the body and the mind do not belong to the same ontological levels of reality. The former is material and bound by the constraints of space and time; the latter is immaterial and able to transcend these constraints. At the same time, the human mind is incarnated and works through the body as its instrument. Thus the bodily-produced sign provides both a hook on which to hang a non-material meaning and a means of evoking that meaning in the mind of another speaker of the same language.

Since meaning is intimately associated with, but not reducible to, bodily processes, emotion-words can, but do not necessarily, bring on embodied simulations: one does not necessarily feel anger when one says the word *angry*. Similarly, mental imagery can sometimes accompany the processing of language, but in my own experience it almost never does: viewing images would get in the way of expressing my intended messages or understanding the import of what someone else is saying to me. Consequently, some of the analyses suggested by the commentator of the meaning of certain sequences that I analyzed in *Linguistic Meaning Meets Linguistic Form* frame things in a way that seems to me to be reductionist. For instance, treating (4) below as "a request to pause or stop an ongoing simulation of mine" (p. 132) is far too concrete:

(4) No kidding with the virus. Forget going out for beers.

What evidence is there that the person who says this would be sensorimotorically simulating going out to a pub for a beer? More generally, what evidence is there that remembering past events, counterfactual thinking and future episodic thinking are all just a matter of simulation? While one **can** form images in one's mind of past, future and counterfactual scenarios, it is not **necessary** to do so.

I would also disagree with the suggestion (p. 134) that "the meaning of *make* rests on a comparatively greater degree of bodily involvement of the agent in the situation." The meaning of *make* is much more abstract than the notion of bodily involvement, being more along the lines of the notion of production or of bringing something into being. Thus the idea of bodily involvement is far too concrete to be applicable to uses such as (5) and (6) below:

(5) What you said made me think that would be a good idea.

(6) You're making it seem impossible.

It seems even less applicable to a use such as "What you said made sense".

In conclusion, I endorse, along with many other cognitive linguists (Lakoff 1987; Lakoff and Johnson 1980, 1999; Lakoff and Turner 1989), both the hypothesis that language involves embodied cognition, i.e. that people use their understanding of familiar physical objects, actions and situations such as containers, spaces and trajectories to understand more complex and abstract domains, and the principle articulated by Langacker (1987, p. 11; 2000, p. 1) that the foundational relation on which all human language is based is the association between a mind-engendered meaning and a bodily-produced sign. However, just because the mind works through the body does not entail that the mind can be reduced to the body.

References

Barr, S. M. (1995), "The Atheism of the Gaps", *First Things*, November 1995.

_____. (2007), "Faith and Quantum Theory", *First Things*, March 2007.

Duffley, P. J. (2019), "What's on Your Mind Is Not on Your Brain – Hopefully", *Odisea*, 20, 65–73.

Lakoff, G. and M. Johnson (1980), *Metaphors We Live By*, Chicago, University of Chicago Press.

Lakoff, G. (1987), *Women, Fire, and Dangerous things: What Categories Reveal about the Mind*, Chicago, Chicago University Press.

_____. and M. Turner (1989), *More Than Cool Reason: A Field Guide to Poetic Metaphor*, Chicago, University of Chicago Press.

_____. and M. Johnson (1999), *Philosophy in the Flesh The Embodied Mind and Its Challenge to Western Thought*, New York, Basic Books.

Langacker, R. W. (1987), *Foundations of Cognitive Grammar*, Volume 1, Stanford, Stanford University Press.

_____. (2000), *Grammar and Conceptualization,* Berlin and New York, Mouton de Gruyter.

Meurer, C. F. (2022), "Could Sign-Based Semantics And Embodied Semantics Benefit One Another?", *Manuscrito*, v. 45, n. 1, 123-144.

Nagel, T. (1986), *A View From Nowhere*, Oxford, Oxford University Press.