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Our Twenty-Year Journey of Co-Discovery: A Retrospective Dialogue with Jim Lantolf

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Prologue

Since my contribution to this special issue commemorating Jim Lantolf's life and work deviates from a traditional journal paper format, I forego an abstract and begin with a prologue befitting the one-act play "Conversations with Jim" I have created to show my gratitude to Jim for his guidance and wisdom through many years. In this tribute to his enormous impact on second language studies and Vygotskian scholarship, I hope to showcase the power of collaborative inquiry and mentorship in advancing knowledge. In our retrospective dialogue, we cover three main areas of Vygotsky's work: (1) *Znachenie slova*: We challenge common interpretations by distinguishing "analysis into units" from "units of analysis," highlighting the interplay of stable cultural meanings and individual sense-making (*smysl*); (2) Sense and Meaning: we dissect the relationship between *sense* and *meaning* in external and internal speech, emphasizing the role of affect and subjective experience (*perezhivanie*) in shaping an internal system of meaning; and (3) Consciousness: We follow Vygotsky's advice and explore the origins and development of consciousness, from its emergence in single-celled organisms to the human capacity for meta-consciousness, drawing on recent scientific and philosophical insights.

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¹**Setting the stage:** Throughout my career, I have had the privilege of collaborating closely with Vera John-Steiner and James Lantolf, two leading experts in interpreting Vygotsky's theories, especially in Second Language Learning. Vera greatly influenced both Jim and me,

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providing a solid foundation when our collaboration began. Cultivating a scholarly collective has been a hallmark of Jim's distinguished career and earned him a place of eminence. I have been fortunate to receive his steadfast and continuous encouragement in my scholarly pursuits. In recognition of our joint appreciation for dialogic learning, I have crafted this retrospective dialogue by weaving together examples of our oral and written communications spanning the last twenty years. They include selections from email correspondence, Jim's editorial responses to my manuscripts, my comments on his responses, and passages from our publications. I used authorial license to craft a smooth-flowing dialogue, but in doing so, I found myself adding words for Jim. To ensure I was not presenting concepts with which he disagreed, I emailed him a draft to check for accuracy and invited him to jump into the dialogue and answer my questions. He graciously agreed, making substantial contributions and posing questions that brought the dialogue to the present as I responded to his questions and commented on his insightful additions. In this tribute, I indicate Jim's contributions in *italics*, while mine are in Roman font. Since I am using a written form to portray an oral dialogue, I ask that you imagine Jim and I reading from the library's books as we give voice to Vygotsky's and others' written texts.

Instead of conforming to the APA style of this journal, which would look strange in a dialogue, Jim and I refer to the written work to lead you to the appropriate item in the References list. I hope the mixture of informal conversation and more formal academic writing is manageable.

The Curtain Rises

On a cozy book-lined library, fire crackling in the hearth. Jim and Holbrook settled comfortably in worn-leather wingback armchairs, glasses of a nice red at hand, surrounded by books within easy reach, from which to supplement the dialogue, which now begins.

Thanks so much, Jim, for sitting down with me to reminisce about our 20-year collaboration. I am excited about revisiting the past, co-thinking in the present, and setting the groundwork for further discussions.

You are most welcome, Holbrook, as I have always enjoyed our conversations and sharing a glass of wine with you. Where should we begin?

I believe our journey began when you emailed me nearly two decades ago.

That's right. I was interested in your presentation on Vygotsky's use of analytic units at the 2005 International Society for Cultural Activity Research (ISCAR) conference in Seville, Spain. I had been struggling for quite a while to work out the implications of Vygotsky's argument that word meaning is the unit of analysis for studying consciousness in light of my research on second language learning, my primary area of interest, and I wanted to exchange ideas with you.

I remember thanking you for contacting me because I had long admired your work. My presentation described Vygotsky's methodological approach, especially his analysis of the unit *znachenie slova* – “word meaning” or better “meaning through languaging,” which has been

central to my career's research. The Russian version of *Thinking and speech* does not use the term "units of analysis" but instead represents the concept as "analysis into units." The mistranslation of the original Russian term into "units of analysis" has led to confusion regarding Vygotsky's concept since researchers in various fields utilize this phrase differently than Vygotsky.

For his study of the human *psyche*, Vygotsky derived the unit, *znachenie slova* – a Russian term describing the dialectical link between *speaking* and *thinking* – to analyze the foundation of human consciousness. This term has frequently been translated as "word meaning" misconstruing Vygotsky's use of it. Additionally, the contention that he used it to study consciousness is widespread, but that's not quite right. He used *znachenie slova* to examine the speaking and thinking unity – which he captured in the term *rechevoye myshleniye* – as an essential aspect of human consciousness but not consciousness as a whole. The latter was his unrealized ultimate objective.

You make a critical point about analysis into units vs. units of analysis. I could not agree with you more about what Vygotsky says about the word 'meaning,' which he understands as a generalization (i.e., concept). He makes this very clear in the 1930 work he co-authored with Luria: Ape, Primitive Man and Child. It is also essential to consider the domain one operates in when dealing with the appropriate unit to study the mind. For example, in the sociocultural domain, the word 'meaning' is a suitable unit, representing the more or less stable meaning constructed by culture. However, in the ontogenetic domain, word meaning per se is problematic because it does not consider how individuals modify meaning as needed in concrete activity. Thus, I believe the appropriate unit is the dialectic between stable word meaning and the intentions of the person engaged in goal-directed activity, guided by their sense (smysl) – the dialectic between cultural and personal meaning.

I appreciate your distinguishing between stable meanings in a particular culture and the individual use in certain social situations. The dialectical unity between cultural and personal meaning represents the unity between the external and internal planes of speech Vygotsky described. Individuals visually and orally sense stable meanings as they internalize them, creating their own internal *meanings* and imbuing them with personal *sense*. As I indicated in my ISCAR presentation, Vygotsky emphasized that his focus was investigating the *internal structure of meaning*. To do so, he analyzed the unit *znachenie slova* (meaning through languaging. As you know, he emphasized the unit itself is a *product* of analysis, an often-overlooked aspect of his methodology. He analyzed *znachenie slova* to understand *rechevoye myshleniye*, the unity of speaking/thinking. The issue you raise about modifying *meaning* in concrete activity seems central to a child's language development process. Vygotsky argued that while separate, *thinking* and *speaking* are tightly interrelated in a dialectical unity in which publicly derived speech completes privately initiated thought.

I wonder if it might be better, and in keeping with Marx, to say an internal dialectical unity. I say this because some people interpret dialectics to be about any contrasts, including those that might arise between two unrelated entities. Marx and Vygotsky stressed the importance of internal dialectical unities, e.g., production-consumption and speaking-thinking. These are

inseparable because something significant will be lost if they are separated. It took me a while to appreciate the significance of this notion.

The misinterpretation you describe flows from not recognizing that a dialectical unity is defined by the internal essence of the opposites being unified. Your examples of production-consumption and speaking-thinking nicely illustrate this. The internal essence of the first is that two distinct processes are unified in human survival. In the second, the internal essence is that both, though distinct, are aspects of the human neuronal network that evolved biologically through social organization for survival resulting in the development of social meanings. Is that what you mean by stable meanings?

Yes, but the issue for me is that in concrete activity, meaning is neither stable nor can it be. Thus, people use cultural meanings to create new meanings (smysl) as needed for concrete activities. Others appropriate some of these new meanings, and eventually, the so-called stable meanings of the culture will change.

That accurately describes *meaning* in the external plane of speech, but we also need to recognize that Vygotsky used *smysl* to refer to both *sense* and *meaning* in internal and external speech. He aimed to illustrate the dialectical unity of *sense* and *meaning*, both in the realm of private thought and in public discourse, emphasizing the inherent connection between the external act of speaking and its internal origins within the mind. His focus, as has been mine, was on the internal plane of speech, which he describes in *The Problem of Consciousness* in the 1997 third volume of the *Collected Works*, “*meaning is the internal structure of the sign operation.*” He stresses that words disappear in the internalization process with *meaning* carried by letters instead of whole words, which he illustrates through the dialogue between Tolstoy’s Kitty and Levin, one they carry out using only the initial letters of words. This internalization of meaning provides the foundation for the internal structure, the analysis of which was the focus of his initial investigations into the nature of consciousness. Yes, the external meaning of words is central to the sign operation, but it is the internal structure that Vygotsky examines in his analysis of *znachenie slova* – meaning through languaging. I do not see a contradiction between that and your correct observation that the meaning of particular words is unstable in concrete activity. In your context, *smysl* is accurate, but Vygotsky uses *znachenie* when he writes about the internal structure, not *smysl slova*, though he pointed out, as did you, that *sense* predominates over internal *meaning*. This difference may hold the solution. I hope our discussion on this topic continues to evolve, as your insights will undoubtedly challenge and refine my thinking.

*I hope so too, but I can’t resist just one more comment on word meaning. I believe that when Vygotsky wrote about word meaning (not *smysl*), he was primarily concerned with the meaning of scientific concepts as something that children acquire in school (or so he hoped). These are quite stable and change to the extent that scientific understanding of a field progresses. However, even in this case, we cannot assume that children or adults take in these meanings whole cloth without some type of transformation (making *smysl*). We address this matter to some extent in our 2006 book *Sociocultural Theory and L2: State of the Art with the**

following example -- James Maxwell, the British scientist, and Thomas Edison, the American inventor, both read the work of Michael Faraday on electromagnetism. However, they each constructed, and indeed, because of their histories, could only create unique personal meaning (smysl) from the same text ostensibly containing the same scientific concepts. The result for Maxwell was a unified theory of electromagnetism with interlinking electric and magnetic fields that traveled through space as electromagnetic waves. The result for Edison was an improved filament for light bulbs.

This is an excellent example of scientific concepts learned at school exemplifying stable meanings. These meanings are sensed and internalized, becoming part of the internal structure of meaning. This also illustrates what Vygotsky meant when he described the predominance of *sense* over internal *meaning*. Thanks for referencing experts in different scientific disciplines; we need those voices in the Vygotsky community. The example of Edison and Maxwell also illustrates Vygotsky's concept of *perezhivanie*, as their individual affective subjective experiences influenced their interpretations of Faraday's work. I have long appreciated your breadth of knowledge in both Vygotsky's work and other fields, as you always have references to supplement our discussion, as you did earlier with an example from Luria to illuminate the concept of *znachenie slova*.

Thanks. Now I may take our dialogue afield with what I introduce here, but it seems that Vygotsky's example in Thinking and speech of seven drunks using a single Russian pejorative term with different intonations and gestures is intended to illustrate smysl rather than znachenie, don't you think?

Yes and no. By the way, the Dostoevsky passage is one of my favorites. I think Vygotsky was illustrating both *smysl* and *znachenie* in describing intonation and gestures as the drunks expressed their *meaning*, saturating the same word with their psychological *sense*. You are correct in pointing out that this is an excellent example of the difference between *sense* and *meaning* in external speech. However, the relationship between *smysl* and *znachenie slova* differs if we look at the internal meaning. Vygotsky warns in *Thinking and speech* that the lack of terminological clarity leads to much misunderstanding, with researchers arguing about very different things designated by a single term – the fate of *znachenie slova*. Translating this Russian phrase word-for-word into *word meaning* misconstrues the idea Vygotsky intended to communicate because researchers focus on the external linguistic features of language use instead of on the internal structure Vygotsky analyzed through *znachenie slova*. The Russian word *znachenie* connotes “meaning” and *slova* “word” to represent language use as a whole, as languaging. Vygotsky makes it clear that he is using *znachenie slova* differently to describe an inner structure and, in doing so, also recognizes the importance of external languaging in social and cultural contexts, as we can see in this quote from page 133 of the 1997 third volume of his *Collected Works*.

Meaning is the path from thought to word. Znachenie slova is not the sum of all the psychological operations which stand behind the word. Znachenie slova is something more specific – it is the internal structure of the sign operation. It is

what is lying between the thought and the word. *Znachenie slova* is not equal to the word not equal to thought.

That is a critical quote from notes taken at the 1933 internal conference Vygotsky held with his closest collaborators to prepare a response to the Soviet bureaucracy's attacks on their circle.

That's right. Vygotsky's focus was clarifying the development of his thinking about the centrality of internal *meaning*. Another challenge I have faced in understanding Vygotsky's use of *sense* and *meaning* is his use of *smysl* to refer to both human/animal *sense* and human *meaning*; the context of his use is essential in understanding his connotation. In *Thinking and speech*, Vygotsky generally refers to *sense* as human *sense* while recognizing the foundational and predominant role of inborn animal natural *sense* in creating the internal thinking/meaning formation, the internal system of *meaning*.

I noticed you referred to it as a system here rather than a structure as before. What's the difference?

Initially, I drew on Vygotsky's chapter "On Psychological Systems" in the 1997 volume of his *Collected Works* I quoted earlier and the importance of systems in his methodological approach. Still, now that I think about your question, I realize I should not use them interchangeably as they represent two entities, one metaphysical and the other physical. Going forward, I will use *system/structure* because that captures the essence of a concept I am developing – the human Semantic Neuronal Network. This network has its structural foundation in the evolution of the brain/mind in the animal kingdom, and it developed in humans through tool creation and languaging.

I don't want to wander from this thread in our dialogue, but I wonder if only the brain evolves as a physical organ, which the mind does not. Vygotsky points out that so-called primitive peoples going back in time and our current world have the same brains as we do, but they don't have the same minds because of cultural differences.

True, Vygotsky distinguishes between the brain as a biological organ and the mind as a cultural and psychological construct. However, the *mind* co-evolves in unity with the brain. The biological brain consists of neuronal networks and synaptic connections shaped through engagement with cultural, social, and historical contexts. The unity of the brain's mental and physical aspects shapes cognitive process development, which will differ depending on time and context. This is where the concept of *mind* comes into play because Vygotsky viewed the *mind* as encompassing more than just the brain's neuronal activity. He included cultural tools and symbols (such as language), social interactions, and historical traditions that individuals are exposed to and are engaged in throughout their lives.

Another aspect of the evolution of the human brain involves increased connectivity and functional specialization, which leads to more efficient processing and communication between different brain regions. There are also factors driving the evolution of the human brain

that Vygotsky did not investigate in depth, such as environmental pressures, including climate change, dietary changes, social life complexity, and the need for problem-solving and communication skills. It will be interesting to see how AI affects the human brain. We can discuss this more at another time, but your probing questions have significantly stimulated my thinking, which is why I so enjoy dialoguing with you.

Thank you. Those are important considerations since the internal system/structure has its foundation in the physical structure of the neuronal network. I am curious about your concept of Semantic Neuronal Networks and look forward to discussing it further. Given your awareness of the importance of etymology to get to the essence of a concept, semantic comes from the Greek semantikos, which means “significant,” relevant to our discussion of the sign operation, or “having meaning,” pertinent to our discussion of the internal system/structure of meaning.

Thanks for that, Jim, as I have not looked at *semantikos* to make that distinction. Concerning your comment about *the foundation in the physical structure of the neuronal network*, Natalia Tucker, one of my doctoral students whom you met in one of our Zooms, has been researching the Russian terminology Vygotsky used to convey his central concepts in the original editions of his work, not the subsequent editions Leontiev altered substantially. In doing so, she encountered a term that has flown under the radar in Vygotskian studies: *smysloobrazovanie*, which he uses to describe the nonphysical structure of the neuronal network – its *meaning formation*.

I do remember Natalia. I wonder why Vygotsky uses smysl rather than znachenie to form this compound?

I believe his use of *symysl* (sense) highlights the significant influence of affective subjective experience on our internal language and thought processes, particularly within the 'internal system of meaning,' where the core concept of 'znachenie slova' (meaning through languaging) resides. As you mentioned, *meaning* is a generalization, so *smysloobrazovanie* is constructed through generalization.

In Chapters Five and Six of Thinking and speech, Vygotsky describes the origins and development of this structure of generalization and how children gain conceptual meaning to construct meaning formation.

I just read a May 16, 2024, *Scientific American* article, “Device decodes ‘internal speech’ in the brain,” that helps understand the physical foundation of meaning formation in the neuronal network. It describes a research project in which scientists implanted a brain-computer-interface chip to decode inner speech. They implanted it in the supramarginal gyrus because of its role in several cognitive functions central to the reception and production of external languaging, like language processing, spatial attention, multisensory integration, and action planning and execution. I believe this is the primary physical location of the distributed Semantic Neuronal Network. Researchers could identify words two people silently voiced in

their minds without moving their lips or making a sound. Not only were they able to locate the activity of neurons in inner speech, but they also found that 85 percent of neurons active during internal speech were also active when the participants vocalized the words. I will send you the [link](#) as you will find it most interesting.

Thanks, I am sure I will, especially concerning Vygotsky's discussion on the intersection of the external and internal planes of speech and other forms of language. I look forward to reading it because it sounds similar to what Sokolov writes about in his 2016 book Inner Speech and Thought, in which he used EEG and other less-sophisticated instrumentation to come to the same conclusion.

I am unfamiliar with Sokolov's work, so thanks for the reference. The research I cited also helps show where and how the unity of the brain and mind occurs conceptually and physically, transcending the brain/mind dualism.

I'm uncomfortable with the term "brain/mind."

Matthew Rethorn, my co-author for an article we are writing, also hesitates about using a slash since it is commonly used to separate, but where does your discomfort lie?

I don't think distinguishing the mind from the brain creates a dualism because the human mind results from the function of the human body, which includes the brain but is not exclusive to the brain.

Marx, echoing Spinoza, used the phrase *thinking body*, which illustrates your point. A Vygotsky on a number of occasions stressed that we examine phenomena a *both/and* rather than *either or*. The slash indicates the internal dialectical unity of *brain* and *mind*. They are the same but distinct. I want to return to our discussion about *sense* and *meaning* and the term *smysloobrazovanie*. Two other Russian students, Svetlana Mylnikova and Natasha Rud, worked with Natalia to examine the etymology of the Russian words Vygotsky used to convey central concepts like *smysloobrazovanie*, which is a compound of *mysl* and *obrazovanie* and represents the thinking/meaning formation process. *Myśl* derives from the verb *myslit*, "to make sense of, reason, understand." *Obrazovanie* consists of the verb *ra/eziti* from Proto-Slavic *ob-razъ-*, which means "formation."

That is very interesting, as I was unfamiliar with the term. It helps clarify the two senses in which Vygotsky uses sense – as sense and meaning in different contexts.

That etymological analysis also helped me understand the *system/structure of meaning* because *myslhenie* derives from the word family of *mysl* "thought," which stems from Slavic and the Proto-Indo-European **tong-* "to think, feel." In its origins here, we can see the distinction between the two concepts, with "thinking, perceiving" as *meaning* and "feeling" as *sense*, though, as you mentioned, they are dialectically united. He conceived of the distinct sensing and perceiving processes as a unity, drawing on Marx's unification of the two in his

concept of *human sensuous activity*. The *sensing/perceiving unity* is vital to understanding *smysloobrazovanie* as the formation of human internal structures, systems, and networks developed through languaging in social activity. Not understanding how Vygotsky differentiated *sensing* and *perceiving* in the original Russian obscures their unity.

So, how do you differentiate sensing and perceiving?

I use *sensing* to refer to how information from the environment is received by the sense organs and transduced into energy appropriate to the organism. *Perceiving* involves affectively judging transduced information through *perezhivanie*, determining whether it is beneficial for survival, growth, and reproduction; in other words, does it feel positive or does it feel negative or detrimental to these processes, and based on this judgment, motivating appropriate activity. Let me read you a passage from page 202 in an excellent 2024 book, *The Blind Spot*, that describes a unified philosophic/scientific approach with human subjective experience at its center. They use James Gibson's notion of affordance to illustrate their point:

The ecological psychology of James J. Gibson and his followers understands perception as an activity of the whole animal, not an episode inside its head. The content of perception is the layout of the environment and what that layout affords the animal, not a model in the brain. Brain processes facilitate perception, but perception isn't a brain process. Perception is a way the animal, given its sensory and motor capacities, is related to the world. Enactive cognitive science shares this viewpoint.

The analysis of *sensing* and *perceiving* in creating *subjective experiencing* provides the logical and necessary starting point for studying how consciousness came into being, beginning with one-celled organisms, as Vygotsky suggested. Differentiating *sensing* and *perceiving* also helped me understand the relationship between *sense* and *meaning*.

It is interesting that A. N. Leontiev, when referring to Vygotsky's orientation to meaning, uses the Russian smysl rather than znachenie.

The problem with substituting *smysl* for *znachenie* is that the relationship between the two, critical to the *system/structure of meaning*, is eliminated. It also muddies Vygotsky's two uses of *znachenie* – to refer to the internal system/structure of meaning and also to the external sociocultural meaning. *Sense* is an essential component in the internal system/structure of *znachenie*, but it is not identical to it. The interplay between *sense* and sociocultural *meaning* develops the system/structure of meaning. In 1933, at the internal conference you mentioned, Leontiev argued sharply against Vygotsky's concept of *znachenie slova* as central to the analysis of consciousness and proposed substituting the idea of "human labor activity" for it. As you are well aware, he broke theoretically and physically from Vygotsky on this point, moving to Kharkiv with several others and further developing his version of Activity Theory.

That was indeed a central event that deepened the gap between Leontiev and Vygotsky and developed their very different theories. When I read a paragraph in Chapter 7 of Thinking and

speech, at least in its English translation, Vygotsky prioritizes sense in inner speech as essential for thinking. Here, he writes of the "edifice of sense," of which meaning is only a "cornerstone." I looked at the original Russian text, and what Vygotsky writes in this paragraph is about *смыслом слова* (sense of a word--*smysl slova*. It is on page 305 of the Russian text), which he claims is more important than the meaning (*znachenie*)

So, we have circled back to the beginning of our dialogue. As I mentioned earlier, you are correct that Vygotsky writes that *sense* predominates over *meaning* in inner speech. Still, it is crucial to investigate the construction of the internal system of meaning. *Meaning* in the Semantic Neuronal Network develops through the mechanisms of synaptic strength and associated neuronal connections. This is where *sense* plays its predominant role through *perezhivanie* because the affective experiencing of a word or phrase significantly determines the synaptic strength of a word's *meaning*. *Sense* is the filter through which the stable meanings of words are instantiated in the internal structure of the system of meaning. The strength and configuration of synaptic connections in response to individual experiences, emotions, and contexts give rise to the intricate mosaic of *sense* that each person brings to languaging, reflecting the internal and external planes of languaging. Speaking of which, in the sentence you quoted, Vygotsky is referring to external, not internal, speech when he writes that *meaning* in the lexicon "is nothing more than a potential that can only be realized in living speech, and living speech meaning is only a cornerstone in the edifice of sense." I wonder if we might say that, in internal languaging, *sense* is a cornerstone in the internal system of *meaning*? As an aside, the Russian phrase *смыслом слова* *smyslom slova* translates as "meaning of a word" according to Google Translate, not "sense of a word," but we can discuss that at a later time.

I look forward to that discussion. In terms of our retrospective dialogue, I believe that after our email exchange about your ISCAR presentation, our next interaction came when I suggested that given your background in language teaching, you might be interested in contributing a chapter to Sociocultural Theory and the Teaching of Second Languages, a 2008 book I co-edited with Matthew Poehner, a former doctoral student of mine.

You're right, and I enthusiastically accepted. I have always valued collaborating with you because I have gained so much insight from our joint thinking, particularly regarding Vygotsky's application of Marx and Engels' methodological approach in developing his theory of *psychological materialism*. Recently, our discussions on language, nature, culture, and social influences merging to mold human consciousness have been most enjoyable.

I remember that your chapter started with Vygotsky's methodology as a foundation for discussing the role of dialogue in your classrooms.

Indeed, a proper understanding of Vygotsky's methodology is crucial to grasp his work's nuances thoroughly. Like you, I value a dialogic approach, so writing my chapter "A Dialogic Approach to Teaching L2 Writing" in your 2008 book allowed me to explore the value of social

interaction in writing in greater depth. Throughout my career in teaching English as a Second Language, my primary focus has always been fostering confidence and proficiency in writing for my students. This emphasis on confidence directly relates to the concepts of subjective and objective Zones of Proximal Development (ZPD) that I explored in that chapter.

So how do you differentiate subjective and objective ZPDs?

Various positive and negative physical and emotional factors influence a student's subjective ZPD. It is also shaped by how interactions within sociocultural environments, the objective ZPD, are absorbed and internalized by the student. The degree to which students gain control over these influencing factors by becoming consciously aware of their thinking processes and using conceptual thinking to guide activity determines whether the subjective ZPD, a process facilitated by effective pedagogy, expands or narrows.

That is a fundamental notion. It looks like the distinction between objective and subjective ZPD, in some respects, parallels Vygotsky's distinction between meaning and sense.

That is an interesting insight, Jim, but I do not think the analogy holds up for the second use of *meaning* – *the internal system/structure of meaning*. The maturing internal cognitive processes establish the subjective ZPD. Objective sociocultural meaning is an external process in an external system. I think the differences outweigh the similarities.

Based on our discussions about your chapter, I suggested you present your thinking in more depth at a panel of contributors to Sociocultural Theory and the Teaching of Second Languages I organized at the 2007 AAAL conference.

Attending that conference also allowed me to share a Keynote slide presentation with you that captured my understanding of *sense* and *meaning* and related it to the *internal system/structure*. Frankly, though, I was nervous going into that meeting.

Really, why?

Well, I know you are a generous listener. Still, in the intervening years since our first email exchange, I had developed my understanding of Vygotsky's central concepts with the insights and questions you and Vera raised. However, I felt my developing interpretation of Vygotsky's work differed significantly from the received wisdom in the Vygotsky scholar's community, and I was not sure how you would receive it.

As I remember, it was well-received, and I found myself in accord with much of your interpretation of the internal system/structure of meaning, which deepened my understanding of sense and meaning. I was also impressed with how you conveyed Vygotsky's complex concepts graphically.

That meeting with you gave me the gift of confidence going forward, as you have done for many students and colleagues, and underscored the value of our collaboration. It led to my 2012 article “Vygotsky’s analysis of children’s meaning making processes,” in which I consolidated the perspective you helped me develop through our discussion of my Keynote presentation.

I believe we next communicated when I invited you to present the 2014 Gil Waltz Memorial Lecture sponsored by the Center for Language Acquisition at Pennsylvania State University.

You’re right. That visit helped me appreciate the high regard in which your students and colleagues hold you. I talked with several of them, and they all expressed their appreciation for your guidance in their doctoral programs and for helping them publish book chapters and journal articles. That lecture also allowed me to continue refining my understanding of Vygotsky’s work through discussing my work with you and audience members. I remember having a lengthy discussion with Gordon Wells there.

Wasn’t his passing tragic?

Yes, it was a significant loss. I collaborated closely with him on the 2002 chapter Vera and I wrote in a book he co-edited – *Learning for life in the 21st century: Sociocultural perspectives on the future of education*. I’m unsure whether you know it, but I posted the Gil Waltz Memorial lecture video on YouTube, which has garnered over 25,000 views.

I did not know that. It is quite impressive. It certainly helps spread Gil’s legacy. I think our next collaborative effort came when I asked you to contribute to the 2018 volume The Routledge handbook of sociocultural theory and second language, which I co-edited with Matthew Poehner and Merrill Swain. I thought a chapter by you on Vygotsky’s methodological approach would be a valuable addition.

I was happy to do so as Vygotsky’s methodology is in my wheelhouse, as we baseball aficionados like to say. Interestingly, our journey of co-discovery came full circle with my chapter, “Essential Aspects of Vygotsky’s Theoretical Framework and Methodological Approach Revealed in his Analysis of Unit(ie)s.” I drew on the unification of thinking and languaging processes – *rechevóye myshlénie* – as constituting a central component of human consciousness, which I mentioned earlier. Vygotsky argued in *Thinking and speech* that instead of dividing the analysis of unities into elements, scientific studies should maintain the integrity of the whole – the object of analysis – and develop a form of analysis that relies on partitioning the complex whole into units. He added that in contrast to the term ‘element,’ the term ‘unit’ designates a product of analysis that possesses all the essential characteristics of the whole. The unit is a vital and irreducible part of the whole. In this case, the whole he referred to was *rechevóye myshlenie*, not consciousness. My chapter demonstrated the essential role your feedback played in shaping my thinking.

Thanks. I appreciated our joint effort in understanding how Vygotsky formulated his method for investigating phenomena by deriving an analytical unit. John Stuart Mill proposed this idea of partitioning into units much earlier. He used the example of salt as the unity of chloride and sodium, similar to Vygotsky's use of oxygen and hydrogen > water. It is the foundation of emergentist thinking in science. A group of British contemporaries of Vygotsky championed this theory. According to letters found in Vygotsky's archives, he remained in London after the conference he spoke at. I have to wonder if he might have had meetings with British emergentists, but that is just speculation on my part.

That is an interesting thought because British emergentism's philosophical perspective theorized that when a system reached a certain level of complexity, higher levels of complexity emerged through qualitative transformations. This perspective aligns with Vygotsky's analysis of the emergence of human consciousness in the dialectical leap from animal consciousness through languaging and tool creation. It is also relevant to our discussion of the emergence of consciousness in general. When the primordial elements preceding life forms reached the higher level of complexity found in archaea and bacteria, life and consciousness emerged from the physical world, thus addressing the "hard problem of consciousness" – how did consciousness emerge from the physical world? Moreover, emergentism posits that we cannot explain the properties of complex phenomena by reducing them to simpler levels.

This last point resonates with Vygotsky's use of a concept derived from Hegel to argue in volume three of his *Collected Works* that the transformation of elementary mental functions into higher psychical processes can be best explained via what in dialectics is called *sn'yatie* in Russian or *Aufheben* in German. The term *Aufheben* has three seemingly contradictory meanings: 1) To raise, 2) to cancel, and 3) to preserve, all of which Hegel incorporated in his analysis of entities created through unifying contradictory processes. Incorporating Hegel's concept, Vygotsky explained that the dialectical leap from elementary mental functions to higher psychical processes involves, on the one hand, the process of raising and, on the other, canceling while preserving the foundation of the elementary mental functions.

Perfect. I have been trying to convince people of this meaning of Aufheben for a while. It parallels in some ways the claims that people in Complex Systems Theory make about non-linear development. However, some in CST use non-linear to reflect what Vygotsky meant by development as revolutionary, which differs from what I would mean by Aufheben.

I agree. Vygotsky employed the term "revolutionary" to emphasize that cognitive development entails dramatic, qualitative transformations that fundamentally restructure a child's psychological functioning. This view contrasts with theories that depict development as a slow, additive, or merely quantitative change. He used *Aufheben* to describe the dynamic processes involved in qualitative transformations, such as in the dialectical leap from animal to human consciousness I mentioned earlier, which he describes in Volume 3 on page 113 in this passage, "Somewhere, in some specific stage of animal development, a qualitative change in the development of brain processes took place which, on the one hand, was prepared by the whole proceeding course of development but, on the other hand, was a leap in the process of development as it marked the development of a new quality that could not be mechanically

reduced to more simple phenomena.” The concept of *Aufheben* also helps explain the process that leads to the qualitative transformation from visual perception to perception based on the *meaning* contained in languaging. This transformation is vital to forming the internal system/structure of *meaning*.

Yes, and I think this holds for children’s individual development when they come to understand and relate to the world in which they live on a conceptual rather than an exclusively empirical basis. Before developing a conceptually-based mental system, children’s knowledge is grounded in their primary empirical experiences in the world based on their visual perception. This experience is mainly non-reflective and, therefore, invisible to children. Once they begin to think conceptually due to the qualitative transformation into verbal perception, children can reflect upon and, thus, gain conscious control over their mental activity. This way, memory, attention, planning, learning, and rational thought become voluntary.

Gaining that control results from the qualitative transformation from the dominance of visual perception to semantic perception, which is key to developing the Semantic Neuronal Network through changes in neuronal nodes and synaptic connections activated by *meaning*.

But it is also important to remember what Vygotsky wrote about perception--that as we acquire the capacity to make and use symbols, biological seeing with the brain becomes cultural conception through language so that when we perceive something, we simultaneously conceptualize it. Thus, when vision detects a leafy green-colored object outside our window, we see "tree," not a leafy green-colored object.

That quote makes me think about the relationship between *perception* and *conception*. I see perceiving as the whole process, which includes sensing, transducing, judging, and acting on environmental information. Concepts are developed from that information. We tend to think about concepts as being solely the purview of humans and that is true if languaging is part of the perceiving process as described in Vygotsky’s quote. But I think all life develops concepts if we use the Proto-Indo-European origins of the word as “gathering, taking in,” in this case, information from the environment. It’s essential, I think, to recognize that the qualitative transformation to semantic conceptual perception also transforms children’s *perezhivanie*, with the *meaning* and *sense* of languaging significantly influencing their subjective experiencing. This is why Vygotsky emphasized *perezhivanie*’s role in the process leading to human consciousness.

Excellent point. What is still missing at this point is perezhivanie, which is central to the formation of consciousness. Vygotsky sought a unit that united verbal thinking and emotion to study and understand consciousness. Does this make sense?

It does. The unity of thinking/speaking has *affect* at its core. Before discussing *perezhivanie*, it is essential to point out that Vygotsky refers to *human* consciousness, not consciousness in general. As for *perezhivanie* – the unit Vygotsky derived to unite semantic thinking and affect Vera and I wrote about in the chapter, “The gift of confidence: A

Vygotskian view of emotions,” in which we elaborated on *perezhivanie*, a crucial concept of Vygotsky’s. We drew heavily from his 1934 article “The problem of the environment,” in which he presents his most in-depth elaboration of the concept: “*Perezhivanie* is a unit where, on the one hand, in an indivisible state, the environment is represented, i.e., *that which is being experienced – an emotional experience [perezhivanie] is always related to something which is found outside the person* and on the other hand, what is represented is how I, myself, am experiencing this, i.e., *all the personal characteristics and all the environmental characteristics are represented in perezhivanie.... So with perezhivanie, we always deal with an indivisible unity of personal and situational characteristics.*”

This resonates with Vygotsky's contention that emotion and intellect form a critical unity in the formation of consciousness. I remember you addressed this in your presentation at the 2019 SCT and L2 Learning Working Group meeting in Pittsburgh, but there you started with the one-celled animal.

Yes, that was an important event for me because, like sharing my Keynote slideshow with you at AAAL, I presented my latest thinking on the origin of consciousness and was apprehensive about how your students and colleagues would receive it.

As I recall, it generated a lot of valuable discussion.

That again gave me the gift of confidence since the audience understood Vygotsky's work well after having studied and collaborated with you. Once again, I saw how valuable your mentorship has been to the Vygotsky community.

Thanks for that. Your presentation on the origin of consciousness in the one-celled animal intrigued me, but initially, it seemed far-fetched. So, tell me more about your contention.

Okay, but before we dive into the primordial ocean to look at the origin of life and consciousness, how is your retirement going?

As retired people often quip, “I’m busier now than ever.” I don’t have the meetings and advising duties I once had, but several international conferences and manuscripts keep me busy. How about you?

That you are continuing to contribute to the field does not surprise me. As for me, I, too, do not miss the meetings and other university obligations. When I retired, I still had ten doctoral advisees whom I promised to shepherd until hooding, which has kept me busy. As for my research, I have been studying different approaches to solving the mystery of consciousness.

I have appreciated our Zoom calls on this topic.

Likewise, I always left them energized with new insights.

I remember we regretted not recording them because we found them so thought-provoking. We also discussed inviting colleagues and former students to join subsequent discussions in a webinar.

Yes, having a transcript would be helpful now to recapture our Zoom discussions, as it is sometimes hard to hold onto abstract concepts, but we can try to recreate them here.

As I recall, you contacted me and asked to Zoom so we could discuss your current thinking on consciousness and then discuss a proposal for publishing this thinking. So, why don't you start with your proposal and share how your thinking is evolving?

Okay, I'll address the proposal first with a bit of background. Over the last decade, my Vygotsky Seminar has focused on "What it means to be human." To answer that question, we used Vygotsky's methodological approach and relied on the latest findings from physics, chemistry, and biology to understand the historical development of consciousness, starting with its origins. In his approach, Vygotsky warned about the pitfalls in formulating a complete definition of the research subject before the investigation had begun, which has marked consciousness studies. For example, panpsychism asserts that consciousness is a fundamental aspect of the Universe, which ends the inquiry before it has begun. Instead, we started with the origin and characteristics of the first life forms to analyze how, when, and why consciousness originated. By tracing consciousness's natural, social, and historical development, we more deeply appreciated Vygotsky's conception of the dialectical leap from animal to human consciousness through tool creation and languaging.

That sounds most interesting, but how does it relate to your proposal?

Well, you have been fortunate to mentor and work with Matthew Poehner, whose dedication, wisdom, and ethos of care mirrors that of Matthew Rethorn, a former graduate student collaborating with me on a manuscript, "Is consciousness really that mysterious, after all?" I propose that we submit this manuscript to the *Journal of Language and Sociocultural Theory*.

That sounds like a good idea.

I don't know when we will submit it since we are trying to incorporate the latest understandings about consciousness from science and philosophy into our argument, which is a never-ending story, but hopefully sooner than later.

I look forward to reading it when you submit it, but please expand on what it will cover and how it relates to language and sociocultural theory.

Well, we started our exploration by following Vygotsky's suggestion that if we want to understand the human mind, we should begin with the one-celled animal. The discussions you and I have had on this topic have been invaluable, as have those with my students, particularly

Matthew Rethorn and Natalia Tucker. I want to acknowledge that *my* thinking is *our* thinking. Vera and I used to talk about co-thinking and accompanying one another on flights of thought, something I have always enjoyed with you. As I give you an overview of the article, I apologize if it comes across as a Mahnologue in what is supposed to be dialogue.

Haha, no worries. Professors have been known to go on at length.

To understand the historical development of consciousness, we've used the latest discoveries in physics, chemistry, and biology, beginning with its origins. This approach is consistent with Vygotsky's methodological framework. We did not start with a definition of consciousness, which essentially ends the inquiry before it has begun. How can one define something that is the subject of the investigation? By focusing on the origin and characteristics of the first life forms, my students and I could analyze how, when, and why consciousness originated. By tracing its historical development, we could more deeply appreciate Vygotsky's conception of the dialectical leap from animal to human consciousness through tool creation and language use.

We begin the article with an overview of the different understandings of consciousness, drawing on studies by non-Western scientists and philosophers. There has been an ongoing dialogue between the Dalai Lama and Western scientists organized by the Mind and Life Institute he started. As part of this dialogue, the Buddhist scholar Matthieu Ricard stated, "Science introduces the objective, third-person perspective, while Buddhism focuses on the first-person subjective experience."

I don't think this notion is accurate. Science is highly subjective and is the only way of reaching consensus, which is the core of science and scientific progress. Naomi Oreskes makes this clear in her 2010 book Why trust science? Accordingly, objectivity is achieved when consensus is reached, but the scientists' subjectivity is within this consensus. Indeed, as Oreskes and others point out, one of the problems that science has created for itself in trying to convince people of climate change is the failure of scientists to admit their subjective orientation and to avoid the conflict with politicians and fossil-fuel industrialists by hiding behind the mythical notion of purity and objectivity of science.

Thank you for the Oreskes reference, as I was unfamiliar with her work. At the same time, we must distinguish between scientists' subjectivity and objectivity and objectivity in general. Understanding subjectivity and objectivity in general is critical to understanding Vygotsky's reliance on Marx & Engels' and Spinoza's theories on subjectivity.

Please expand your reference to subjectivity and objectivity in general.

I look at this question from two perspectives: First, by tracing the evolution since ancient times of subjectivity and objectivity in scientific thought, and second, by examining how they came into *being* not as concepts but in the physical world. The book I mentioned earlier, *The blind spot: Why science cannot ignore human experience*, comprehensively addresses the first

perspective, focusing on the bifurcation of scientific subjectivity and objectivity. Subjective experience is essential to understanding the world. It's not just a "bias" to be ignored.

Those are important considerations.

The authors also substantiate your critique of the Buddhist scholar because we cannot ignore the complexities of scientific subjectivity and objectivity. After all, scientific knowledge is not purely objective and value-free. It is tied to human experience, perspectives, and cultural values, which can influence the way scientific questions are asked, the methods used to answer them, and the interpretations of the results. They suggest acknowledging and embracing this subjectivity within science can lead to a deeper understanding of the world and more ethical and socially responsible scientific practices.

*Thanks for the recommendation. I will certainly check it out as it sounds most interesting, especially the history of the bifurcation of science and philosophy. Vygotsky's methodological approach surmounts the bifurcation by conceiving the mind and body as a unity. In our discussion about being, we covered the second perspective on the subject and object coming into existence or being. It is interesting how Descartes' 'Cogito, ergo sum,' has plagued investigations into consciousness from Plato's *Phaedo* to the present.*

Exactly. That is the point made in *The blind spot* because it results in science leaving philosophy to ponder the *being/thinking* relationship while investigating objective physical reality.

Do you differentiate between physical and material reality?

An excellent question. I rely on Vygotsky's distinction that the *physical* is one aspect of material reality, the other being *non-physical matter* such as ideas and concepts.

How, then, did Vygotsky apply this approach to the unity of the brain and mind?

He and Marx & Engels relied substantially on Spinoza's concept I mentioned earlier of the "thinking body," which posits that mind and body are not separate entities but two attributes of a single substance. Will Durant, in *The Story of Philosophy*, illustrates this concept. Let me read this from my Kindle on page 226: "Mind and body do not act upon each other because they are not other; they are one. The body cannot determine the mind to think, nor the mind determine the body to remain in motion or at rest, or in any other state, for the simple reason that the decision of the mind and the desire and determination of the body are one and the same thing." In this view, mental processes are inseparable from bodily processes, and our thoughts, emotions, and actions are intertwined. Spinoza, however, conceives of *mind* to refer to human cognition and consciousness without analyzing the origin and development of these processes in animal minds.

On the other hand, Vygotsky distinguishes human from animal consciousness in describing the qualitative transformation, which he calls the dialectical leap, from animal mental processes

to human *psychical processes*. On page 115 of Volume 3, Vygotsky describes his approach to understanding the nature of this leap from mental to psychical processes. “We must ask not about the biological meaning of mental processes but about the biological meaning of psychological (psychical) processes, and then the whole insoluble problem of the mind appears soluble.” In his previous work, he focused on the biological development of mental processes through studies on primate behavior. Here, he wants to examine how biology can help explain the *psyche* as differentiated from *mind*. He does this by understanding the biological development involved in human languaging and creating and using tools. Not recognizing Vygotsky’s differentiation of *mind* and *psyche* makes it challenging to understand essential aspects of his theory.

I agree. Vygotsky’s quote resonates with one in my 2017 chapter, “Materialist Dialectics and Vygotsky’s Methodological Approach.” On page 280 of Volume 3, Vygotsky writes, “Human psychological behavior is qualitatively different from that of animals; therefore, blindly transporting methods from the natural into the human sciences created the appearance of science but in fact concealed a total impotence in the face of the studied facts.”

Precisely. Instead of blind substitution, Vygotsky relied on concepts from philosophy, specifically the dialectics of *being*, which opened doors to a more comprehensive understanding of human experience by successfully addressing the concept of mind-body dualism.

I’d like to talk about this dualism because I don’t think distinguishing the mind from the brain creates a dualism as I argued before. Yes, the human mind results from the functions of the human body, which includes the brain, but it is not exclusive to the brain. I’m reminded of Kieran Egan’s comments on the hand as part of the mind but not part of the brain.

Thanks for raising this, Jim, because it relates to our discussion about the internal nature of dialectical unities. Body-mind *dualism* universally references Descartes’ theory that *mind* and *body* are entirely different substances without interaction. This concept has been the primary theoretical basis for separating scientific and philosophical inquiries. You are correct that distinguishing the mind from the body doesn’t create a dualism. Every unity has two distinct elements that can be distinguished by abstracting them from the unity; however, as Vygotsky pointed out, we need to recognize that abstracting the two elements from the unity to analyze them is not the same as analyzing the unity as a whole. As you noted earlier, the elements of a unity are inseparable because the dialectical unity is lost in their separation.

Thanks for that clarification. What about Egan’s concept of separating the brain from the body by asserting that the hand is not part of the brain?

This also needs clarification. Egan’s statement has merit if we conceive of the brain as the *encephalon*, nothing more than the cerebrum, cerebellum, and brainstem. If, on the other hand, we conceive of the brain as the communication link for *sensing* information from the physical and social environments and acting on it, thereby communicating with the environment, then

the sensory and motor neurons distributed throughout the body are part of the brain. The sensory neurons are also called *afferent* neurons. Interestingly, *afferent* and *affect* have the same etymological roots, with one representing physical matter and the other metaphysical matter. You described earlier how Vygotsky chose *perezhivanie* as his unit to analyze the interaction between the environment and how it is subjectively experienced in the body.

So, how are you applying this to neurons?

That question gets to a crucial aspect of the body/mind unity. The sensory neurons receive information from the external world, while their counterpart, motor neurons, also known as *efferent* neurons, communicate information to the environment through *activity*. *Efferent* means “outgoing,” and *afferent* means “incoming.” The efferent neurons control the motor activity of the hand, while the afferent neurons in the hand and the eye communicate information to the encephalon. This process is critical for tool creation.

Arievitch takes a slightly different approach in his 2017 book Beyond the brain, where he argues that the mind is a functional system consisting of the brain, heart, lungs, digestive system, etc. Without these, the brain would be incapable of thought – no mind would exist. And, of course, without culture, there would be no human mind, although there would be mental processes but not a human psyche.

We have already discussed how separating the encephalon from other bodily organs is impossible because of the sensory and motor neurons. The only brain incapable of thought is one in formaldehyde. In comatose patients, there is no conscious awareness, as consciousness is reduced to orchestrating the brain/mind in maintaining bodily functions. As with the brain in the bottle, I’m unsure how the human mind exists without culture. This has been an interesting detour, but I would like to return to Vygotsky’s dialectics of *being*.

But isn’t dialectics about becoming rather than being?

A short answer is, yes, it is about *becoming*, but no, I would not pose it as “rather than” because dialectics is a form of thinking that unites *being* and *becoming* in a dialectical unity. An essential element of all meta/physical reality is that it comes into and passes out of *being* in the process of *becoming*. A longer answer would address Vygotsky’s study of consciousness and how it accounts for metaphysical and physical *being*. He distinguishes epistemological approaches that study manifestations of *being* from ontological approaches that study process – *becoming*.

Yet, isn’t there only a becoming – there is only process, whether it be psychological or physical? I am always and everywhere, not me, even though I may have a sense of a stable me (being). The meaning of being is, in fact, becoming rather than a dialectical unity with contrasting poles.

I think that *being* is *becoming* describes their unity. All dialectical unities consist of contrasting poles like *being* and *becoming*. For centuries, scientists and philosophers have used these two approaches to research reality's complex processes and manifestations. Epistemology examines what we know about a phenomenon's *being*, what we can observe, and how we know it. However, we cannot just compile findings from studying physical manifestations to reveal the essence of the process behind their manifestation – for that, we need an ontological approach. Ontological approaches incorporate epistemological knowledge to study the processes of *becoming* from its origins and development to its inevitable demise, thereby revealing the essence – the *being*, the reality of the process.

Thanks. That helps answer my question. I was trying to say that the essence of being is becoming.

Just as the essence of *becoming* is *being*. *Being* is the essence of *becoming* because the process of *becoming* presupposes something already *being* in existence. The concept of *being* presupposes a contrast with *non-being* or potentiality, which is realized through *becoming*.

That was helpful, but it leaves me wondering what dialectics means for you.

Well, the term *dialectics* has been used to convey many different contexts. Aside from Engels' introduction to the *Dialectics of Nature*, the explanation that resonates with me is one from the book I sent you by George Novack, *An Introduction to the Logic of Marxism*, where he writes on page 69: "Dialectics bases itself upon an entirely different standpoint [than Formal Logic] and has a different outlook upon reality and its changing forms. Dialectics is the logic of movement, evolution, and change. Reality is too full of contradictions, elusive, manifold, and mutable to be snared in any single form, formula, or set of formulas. Each particular phase of reality has its own laws, peculiar categories, and constellations of categories interwoven with those it shares with other phases of reality. These laws and categories have to be discovered by direct investigation of the concrete whole; they cannot be excogitated by the mind alone before the material reality is analyzed. Moreover, all reality is constantly changing, disclosing ever new aspects of itself which have to be taken into account and which cannot be encompassed in the old formulas, because they are not only different from but often contradictory to them."

Thanks for introducing me to Novack's work, which I have incorporated into several of my writings.

It would help us apply our discussion on *being* and *becoming* to consciousness, which is perpetually in a state of *becoming* due to its inherent *being*. A unified scientific/philosophical approach reveals the *being* and *becoming* of consciousness as the unity of metaphysical thinking and physical-biological processes.

That helps clarify how you use dialectics, but your last statement implies that thinking is possible without biological processes, with which Vygotsky would disagree. Biological processes are necessary but not sufficient conditions for human thinking.

You're right; I should not have said *thinking* because you could infer that I was attributing a Platonic Form to *thinking*. I should have said *perceiving* instead of *thinking* because we generally confine *thinking* to humans, whereas *perceiving* is something that all life does. Vygotsky's concept of the dialectical leap from animal to human consciousness through tool creation and languaging highlights the distinction between *thinking* and *perceiving*.

This is why Vygotsky distinguishes between perceiving and conceiving reality, which we covered in our discussion of perceiving and conceiving. It again brings up how these processes are related to reality.

That is the key to how we analyze consciousness in relation to reality. I believe that the unity of subjective-metaphysical and objective-physical processes is critical to understanding consciousness, reflecting reality's meta/physical nature. The term 'meta/physical' with a slash signifies their intertwined relationship rather than a binary opposition. Physical reality has a metaphysical aspect due to its existence and constant becoming, while the metaphysical is ultimately grounded in the physical world. Analyzing this requires a unified approach combining philosophy and science.

Thanks for that clarification. I didn't think you would take a position opposed to what Vygotsky would say.

You are generally right that it would be out of character, but I try to expand my understanding of his work by drawing on advances in the sciences since Vygotsky's time. However, science and philosophy still need his unified scientific/philosophical approach, grounded in dialectical materialism, which rejects reductionist materialism. This approach has deep roots in Western thought, with contributions from ancient Greeks like Heraclitus and Aristotle, expanded by Spinoza's unified body/mind concept, Marx and Engels' dialectical materialism and the creation of historical materialism to analyze human social formations, and Vygotsky's creation of psychological materialism to study the origins and development of human consciousness. This approach recognizes the fundamental unity of the physical and metaphysical, utilizing objective analysis to bridge philosophical reasoning and scientific quantification.

It seems to me that Ilyenkov might be relevant here because of how he dialectically delineates the ideal as the objectification of consciousness in the material world resulting from social activity.

That's an intriguing insight, but I think he differs from Marx & Engels, who felt that ideas, concepts, and consciousness were all *material* drawing on Spinoza's concept of matter. They would disagree with Ilyenkov's contention that the only way for ideas, concepts,

consciousness, etc., to become material is by being embodied in human practices, tools, language, and culture. Marx considered ideas a metaphysical aspect of matter, not needing to gain materiality by being embodied in physical matter.

Yet, Vygotsky borrowed Marx's concept of the doubled experience, which he illustrated with his famous comparison of bees and spiders to weavers and architects. Here is his quote from page 68 of his chapter "Consciousness as a problem in the psychology of behavior" in Volume 3: "This perfectly indisputable explanation in this comparison by Marx refers to nothing other than the doubling of experience that is unavoidable in human labor. In the movements of the hands and the transformations of the material, labor repeats what was first, as it were, done in the worker's imagination with models of these movements and this same material. Such doubled experience allows humans to develop active forms of adaptation that animals do not have. Let us call this new type of behavior doubled experience. Now, the new part of the formula of human behavior looks like this: historical experience, social experience, and doubled experience". This seems to reflect Ilyenkov's notion of idealized nature.

The doubling of experience describes how the *dialectical leap* to human consciousness occurs through tool creation and languaging. Vygotsky references Marx's concept that humans can conceive of a project before commencing it because they have *meaning* through languaging and can create an idea in their minds, drawing on Marx's concept that humans changing nature changed humanity. You are correct that realizing an idea in the natural world aligns with Ilyenkov's concept of idealized nature. However, Marx and Vygotsky's understanding of the non-physical materiality of ideas diverges from Ilyenkov, who posits that ideas must be manifested in the natural world to become real.

I see your point and will have to think more about it.

Also, it is helpful to look at Ilyenkov's theoretical foundation because it differs radically from Vygotsky's on the very issue that initiated our collaboration – the *unit to be analyzed*. Ilyenkov bases his theoretical framework on Leontiev's Activity Theory, which discards Vygotsky's unit *znachenie slova* and substitutes *human labor activity* as the primary unit of analysis for studying human consciousness. As you know, Leontiev relied on Marx's *First Thesis of Feuerbach* to distance himself from Vygotsky's theory and ingratiate himself with the Soviet Bureaucracy by asserting that his Activity Theory was more Marxist than Vygotsky's theory. The much-quoted *First Thesis* states that

The chief defect of all hitherto existing materialism – that of Feuerbach included – is that the thing, reality, sensuousness, is conceived only in the form of the *object* or of *contemplation*, but not as *sensuous human activity, practice*, not subjectively.

Leontiev omitted the term 'sensuous' in referencing the *First Theses*, because Marx uses it to underscore the centrality of analyzing internal behavior to understand human consciousness, which is contrary to Activity Theory. Leontiev's central disagreement with Vygotsky about whether external activity manifest in human labor or the internal activity creating *meaning formation* was fundamental in the formation of human consciousness.

That is an essential distinction. Looking at Marx's formulation in the original German would be interesting.

I thought about that writing recently and found that Marx used *sinnlich menschliche Tätigkeit* to convey *sensuous human activity*. German *sinnlich* is related to the senses and what they perceive and mediate. I found this quote on page 307 in my 1967 copy of Marx's *Writings of the Young Marx on Philosophy and Society*, in which he writes that by *sinnlich* he means: 'human relations to the world – seeing, hearing, smelling, tasting, feeling, thinking, perceiving, sensing, wishing, acting, loving – in short, all the organs of individuality' This concept of 'sensuous' is essential to understanding the meaning of Marx's *First Thesis* and his meta/physical approach to science, which he expands on page 311 of that book. "Sense perception must be the basis of all science. Science is only *actual* when it proceeds from sense perception in the two-fold form of *sensuous* awareness and *sensuous* need, that is, from nature".

We have discussed Activity Theory in the past, and it is a topic we can explore in the future. For now, let's briefly discuss the dialectical leap from mind to psyche.

As we discussed earlier, that is an important, often overlooked point. As we have discussed throughout, the qualitative transformation from the animal mind to the human psyche occurred with tool creation and languaging. This fundamentally changed the relationship between biological processes and mental processes.

That helps me understand how and why you differentiate brain/mind and brain/psyche and broadens our earlier discussion about mental and biological processes. I'm interested in discussing how you follow Vygotsky's advice to solve human cognition by looking at the one-celled animal. I would like you to expand on your contention that life and consciousness came into existence in an interdependent relationship in a one-celled animal's fight for survival. I used to have difficulty wrapping my head around the idea that the first life forms, one-celled animals, had consciousness, but I saw a documentary on the origins of life on the Science Channel that made a compelling case for "consciousness" in single-celled animals.

I would be most interested in seeing that; please let me know how to find it. You were not alone in being skeptical about bacteria having consciousness. The problem is that people tend to anthropomorphize the inquiry by attributing concepts from studies of human consciousness to other life forms, which obscures the investigation of life and consciousness. Matthew and I argue that consciousness is inextricably connected to life, and neither can be fully understood without examining this interconnection, so we begin with the origin of life. We use the concept of abiogenesis, which analyzes the process through which inorganic chemical, electrical, and physical processes transform inorganic matter into organic matter to establish the foundation for understanding the emergence of consciousness with life.

There are many different theories on life's origin. Which one do you prefer?

In my Vygotsky seminars, we started with the widely accepted hydrothermal vents hypothesis that proposes that life originated from the mineral-rich extrusions from Earth's core into the primordial ocean. These vents provided the necessary building blocks for life, primarily carbon and clay, leading to the formation of self-replicating RNA molecules and lipid-protein spheres, eventually creating the cell membrane, distinguishing *subject* from *object*. An essential question remains: how did the metabolic functions necessary for sustaining RNA molecules develop?

I was particularly impressed with how Nick Lane answered this question. I found his [video](#) linked in the manuscript you sent me very effective because it showed deep similarity with significant variation.

I agree and find his theory on the origins of these metabolic functions compelling, but back to life and consciousness. The cell membrane in bacteria creates a division between the internal, subjective processes through which the organism survives and the external, objective processes of social organization needed for survival. At the same time, it unifies them through the individual/social/cultural concepts developed for survival.

Excuse my interruption, but are you claiming that bacteria have concepts?

No worries. Yes, and I start by distancing my investigation from human concepts and examining *concepts* more broadly. As we discussed a while ago, the word *concept* derives from the notion of taking in and holding onto. So, based on the sensed information taken in from the environment and held onto through the perceiving process, the cell acts, and if that activity is successful, it becomes part of the cell's memory in protein folds and chemical marking. Through this process, the cell develops concepts that help it survive.

That helps. And it amplifies the concept of the unity of the external and internal we have been discussing.

Exactly. This unity made manifest through the sensing/perceiving processes is the essence of consciousness. It is necessary to recognize that an organism's consciousness is always part of social consciousness – how the social group senses energy from its environment, becomes aware of it, and collectively decides how to act. Bacteria use chemical molecules and electrical signaling to communicate with the biofilm into which they are organized.

I find communication among all different forms of life fascinating.

If you haven't read Ed Yong's book, *An immense world: How animals' senses reveal the hidden realms around us*, you should. He addresses communication among many life forms and counters the tendency to anthropomorphize animal studies.

I will have to check it out as I am aware of his Pulitzer-winning book on pandemics, so, considering our discussion about subjectivity, how would you apply this to bacteria?

Answering this critical question reveals how consciousness arises in bacteria. The subjective experiencing of bacteria comes through the dialectical unity of the separate and unified external and internal processes. It occurs through sensing/perceiving thermal, chemical, and electrical information from the physical world, answering a long-standing question in consciousness studies: “How does the physical world give rise to subjective experience?” I distinguish the subjective experience of bacteria and other life forms from that of humans, as humans uniquely possess the capacity for meta-consciousness or the awareness of being aware.

Do you mean that consciousness is awareness of awareness? Or do you mean that they became aware of their consciousness? The difference is the difference between humans and animals.

That’s an important question. I would argue that awareness is central to animal and human consciousness. The distinction is that humans, through the dialectical leap initiated by tool creation and languaging, became aware that they were aware.

I have recently read research showing that bonobos and dolphins might have self-awareness.

Researchers have also done mirror tests with birds and elephants that indicate a recognition that the image in the mirror is theirs. The larger question is, what is the conception of *self*?

Vygotsky wrote about this in his work on personality, but it was almost exclusively about humans.

We should approach this discussion as we have previously by examining the emergence of the *self* as *self* within meta/physical reality rather than tracing the origins of the *concept* of *self*. The bacteria cell is aware of its environment and implicitly conscious of its physical form distinct from the environment. How animals make sense of their environments was a foundational starting point for Vygotsky’s approach, as reflected in his incorporation of the research and findings from contemporary primatologists. With few exceptions, all organisms survive by developing a sense of their environments through interaction within their social communities. The *self* exists in a social group, which holds for bacteria through its engagements in social interactions.

That’s another concept that provokes thought, but how does that relate to conscious awareness?

Well, we need to differentiate between self-awareness and conscious awareness. There are two distinct meanings of *conscious awareness*. One is awareness as an aspect of consciousness, an element of subjective experiencing, and the other is awareness of one’s consciousness, which I contend only humans have.

Perezhivanie plays an important role here because affect significantly influences subjective experiencing. Vygotsky argued that perezhivanie is the indivisible unity of an organism's characteristics and situational characteristics.

Yes, and from its origins in one-celled organisms, subjective experiencing has been meta/physical. The information in the physical environmental energy is metaphysical. Bacteria sense/perceive information through biological/physical proteins and then act on it to survive, grow, and reproduce. Approaches that ignore the meta/physical nature of subjective experiencing and consciousness at this level end up eventually in a futile search for the neural correlates of consciousness. Understanding the dialectical unity of the physical and metaphysical in bacteria is vital to comprehending the essence of the sensing/perceiving processes in all living organisms through which consciousness comes into being to orchestrate survival. These processes, through which organisms know the reality of their environments and act accordingly to survive, are the foundation for cognition and life/consciousness.

I am curious about your use of the word know.

Sure. Its roots are *to perceive*, so in that sense, all life perceives, including plants and fungi.

Does that mean they are aware?

Well, the PIE root of *aware* is ***wer-** "perceive, be wary," which all life must do, so yes, they are aware but without awareness of their awareness.

That makes sense to me. So, how does this relate to the formation of meaning?

This formation evolves in the conceptual neuronal network of animals with brains. Vygotsky emphasizes the foundational role of animal sense formation phylogenetically as archaic humans began the qualitative transformations, which led over several million years to the *meaning formation* of modern humans as an internal system/structure of meaning.

I agree because his genetic method spans all domains of human cultural formation – the phylogenesis of our species, the history of human culture in general, human cultures in particular, the ontogenesis of individuals and groups, and the microgenesis of processes.

You touch on an important point because many in the Vygotsky community focus on specific experimental techniques rather than the overarching methodology. I know you covered this in your chapter, Materialist Dialectics, you mentioned earlier.

I drew on Toomela's description of methodology as a philosophy of scientific cognition and the need for a scientific approach to study processes and structures that are not observable.

I have also drawn on Toomela's work, but in this instance, I think what is missing is what can be observed and measured. We tried to do that by examining how Vygotsky uses *smysl* to

refer to the processes and structures in human/animal sensing and meaning. The sensing structures are measurable, which we address in our concept of the Semantic Neuronal Network. This is an essential aspect of the internal structure that brings *meaning* into *being*.

We have referred to being throughout our conversation, but you could go into more depth on your conception of being.

I am happy to because grasping Vygotsky's understanding of *being* is critical for comprehending his scientific/philosophical approach. As always, I look to origins, so for *being*, I speculated about what came before our Universe came into *being*. I used the most widely accepted idea that the Universe was born out of a fluctuation in a quantum field to construct a plausible scenario that illustrates my concept of what existed before our Universe and will exist when it expires, something I conceive of as ultimate *Being*. In this infinite unified quantum field, the three main energy forces governing our Universe – the weak, strong, and electromagnetic – are unified.

Does this refer to nuclear forces? What about gravity? I thought this was the 4th force at work, or does it not hold at the quantum level?

Those are two essential questions. The weak and strong forces are nuclear forces, while electromagnetism and quantum theory are intimately linked and necessary for understanding the behavior of particles and fields at the most minor scales. You are right to bring up gravity as the 4th force because it is essential in our Universe, but it only comes into existence with the Universe. As for gravity at the quantum level, a physicist I admire, Carlo Rovelli, has developed a theory he calls Loop Quantum Gravity, which suggests that space and time are not continuous but instead exist as discrete "chunks" or quanta, similar to how energy exists in discrete quanta (photons).

Okay, that makes sense. I will have to check out Rovelli's work but tell me more about this infinite field you speculate about.

Sure. This infinite unified quantum field and the matter and energy in it, conceivably forms of Dark Matter and Energy, is in thermodynamic equilibrium and, being infinite, has neither beginning nor end. It is *Being* in the sense of Aristotle's *being* as *being* in and of itself. He often referred to his philosophy as the science of *being*, 'a science which studies *being qua [as] being*, and the properties inherent in it in virtue of its own nature.' With your interest in etymology as an essential aspect of Linguistics, Aristotle's use of *being* consists of two related concepts – existence – from the Proto-Indo-European ***bheue** meaning 'to be, exist' and essence—from ***es-** 'to be. He posited that there are two types of being: being in and of itself and being as manifest in meta/physical reality in our Universe.

Okay, that helps, but how did the Universe evolve out of this infinite field?

That's a great unknown, but I speculate that a quantum fluctuation brought about a temporary random change in the amount of energy at that point. This energy was incredibly dense and unstable, attracting energy/heat instantaneously to that point from billions of miles distant in the infinite field, resulting in thermodynamic non-equilibrium. To restore the equilibrium of this infinite field, a rapid expansion, much of it in the first second of the Universe – the Big Bang – was needed to cool down the thermal non-equilibrium. Particles from quanta came into *being* in the first second, and then after 380,000 years, the Universe had cooled sufficiently for hydrogen and helium atoms to come into *being*.

That's the light that the James Webb telescope is observing now, the limits of what we can observe in our Universe.

Good point. These hydrogen and helium atoms are manifestations of the *Being* of this infinite field, and, like all manifestations of meta/physical reality, they come into and go out of *being* in a continuous manifestation of meta/physical reality, reflecting dialectics' fundamental principles. In describing this reality, we distinguish the *Being* of the infinite field and the *being* revealed to the eye and contained in the concepts derived through languaging processes that give *meaning* as *meaning* to the Universe. I extend Aristotle's and Spinoza's idea of the Universe/Nature as *Being* to include the *Being* of the Infinite Unified Quantum Field.

We've covered a lot of ground, so maybe we should bring our retrospective dialogue to an end.

Before closing, I want to acknowledge your significant contribution to the Vygotsky and Second Language Learning communities through founding and editing the *Language and Sociocultural Theory* journal. It has provided hundreds of students and academics a platform to disseminate their research investigating the intersection of language and sociocultural theory.

It has been a labor of love.

I have enjoyed the Zoom sessions we had over the last several years, not only because it has enriched my understanding of Vygotsky's analysis of human consciousness but also because I got to know you better as a person as we shared childhood experiences, especially playing sports. It was quite a coincidence that we both let baseball card collections, now worth millions of dollars, slip through our fingers. I also appreciated sharing the challenges we face as we begin shuffling off this mortal coil, and we agreed that in that process, we should live by George Bernard Shaw's wisdom: "We don't stop playing because we grow old; we grow old because we stop playing," and Dylan Thomas's: "Do not go gentle into that good night."

Yes, good advice. Well, thank you for engaging me in this retrospective reflection on our friendship in our 20-year journey of co-discovery. I have enjoyed our discussions and hope we continue.

Let's plan on continuing them in the Land of Enchantment with a glass of New Mexican red in hand, with which I will salute your distinguished career and your support to innumerable students and colleagues around the world who have benefitted greatly from your assistance in understanding Vygotsky's work, especially related to teaching/learning in a Second Language. So, I raise my glass to you with a heartfelt "Cheers!"

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