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The Tiny, Grammar-Bound Island

Susanne K. Langer on the limits of language modeling.

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...there's a concerted effort on the part of Silicon Valley to make us believe that the human mind is predictable, replicable and unsophisticated, and that the arts and adjacent sectors are reducible to a set of equations and keywords, because they've spent billions creating machines that can knock out forgeries of creative endeavours and mildly amusing images of Harry Potter characters wearing Balenciaga.

Tristan Cross, *The Guardian*

...human speech is like a cracked cauldron on which we bang out tunes that make bears dance, when we want to move the stars to pity.

Gustav Flaubert, *Madame Bovary*

Until the recent prophecies of doom by artificial intelligence scientists and entrepreneurs, AI had largely entered the popular imagination through science fiction. And in a very real sense, it has been a fiction for the seventy-plus years of its lifespan. Just as the flying machine, the airplane, was a hypothetical until the science of flight mechanics was mastered, so, too, the thinking machine, a computer that can simulate human intelligence, is a hypothetical. AI scientists have made remarkable progress in recent years. They have created programs that can complete tasks faster, more accurately, and at a scale far beyond the capacity of a single human brain. AI excels at simulating human intelligence in rule-governed activities like games. Nonetheless, AGI, artificial general intelligence, remains elusive.

Current methodologies, involving neural networks, vast data sets, pattern recognition, probability, and prediction differ from earlier forms of AI, which were based on logic and symbols. That shift accounts for the recent, accelerated progress. However, the two approaches share epistemological moorings. Both assume that discursive language and mathematics can

capture the essence of AGI. But human thought is much more than math and language. There are non-discursive ways of knowing—tacit, embodied, iconic, contextual, or even musical—that can't be captured by language models, however large. The limits of language are the limits of AI's world, a point drawn out in a [thoughtful essay](#) by Jacob Browning and Yann LeCun (the latter, improbably, Meta's chief AI scientist). Word-prediction engines such as GPT-4 are, they argue, impressive but shallow—loquacious parrots that, “even if trained from now until the heat death of the universe,” will never approach human intelligence. AI pioneers in the earlier, symbolic tradition shared a similar misplaced confidence in language. The effort to build an elaborate, logical map of sentences that could power human-like reasoning was, to Browning and LeCun, itself a fool's errand.

We agree, and also acknowledge the important work of critical scholars to expose the biases baked into many AI models. Our modest objective here is to add a historical dimension to the critical toolkit by highlighting the work of a profoundly underappreciated thinker, whose work advances and thickens the limits-of-language case. Although she was a prolific scholar, Susanne K. Langer's best-known work was *Philosophy in a New Key* (1942), published fifteen years before the term “artificial intelligence” was coined. Yet her indictment of the linguistic completists of her day holds up remarkably well; indeed, we can read a prescience, sometimes uncanny, into her paragraphs about the world beyond paragraphs.

Langer (1895–1985) began her philosophical studies when logical positivism was in its ascendancy—an approach that centered language and logic, and claimed that only sentences that can be empirically verified are meaningful. The abstract-mathematical approach of physics served as their exemplar. Langer's first book, *The Practice of Philosophy* (1930), was favorably received within this circle. Her life's work would, however, radically challenge the view that all articulate communication can be expressed in logical-mathematical language.

Langer's core claim was that, “[a]t best,” discursive thought represents “a tiny, grammar-bound island” within a vast range of human experience. Computer science and its loquacious parrots are signature products of this tiny island, which demonstrate both the strengths and limitations of its semantic. Langer maintained that there are significant non-discursive forms of intellectual activity: communicative forms that do not dwell on the grammar-bound island.

Moreover, she argued, “they are not necessarily blind, inconceivable, mystical affairs; they are simply matters which are conceived through some symbolistic schema other than discursive language.” Visual and musical forms, for example, are non-discursive. Yet they are logical, Langer asserted, in the strictest sense. They can communicate meanings that discursive language cannot—what Langer refers to as “the ineffable” aspects of human experience. Her lifelong project was to expand the scope of rationality to encompass symbolic forms traditionally dismissed as “feelings” or “intuitions.”

The avalanche of neural-network AI has, to be sure, added dimension and depth to the discursive island. Large language models (LLMs) have expanded the semantic reach of AI to include ordinary language and analogical reasoning. These advances promise many pragmatic applications that should not be underestimated. These loquacious parrots, nevertheless, are fundamentally limited by language itself. Their intelligence remains artificial in the full sense of the term. Human intelligence draws upon a panoply of ways of knowing and being that Langer identified.

To get at what Langer means by non-discursive knowledge, consider a visual form such as a photograph. A picture, like a painting or drawing, has no vocabulary; it can't be divided and reassembled like words in a sentence. We take in photographic meaning all at once, as an indivisible whole. The mind, Langer claimed, reads the image “in a flash,” perceiving an “incredible wealth and detail of information.” We can't reconstruct its meanings, not adequately at least, in a subsequent word-painting. What we are left with, instead, is a “disposition or an attitude.” Even our basic perception of the physical world, Langer argued, bears this “peculiar articulateness.” As we process the flux of sensations through sight and touch, we develop an “understanding of space” that could never be won, “in all its detail and definiteness,” by a “discursive knowledge of geometry.”

Music, to take another example, can express forms of knowledge that lie beyond the established conventions of language. An accomplished musician herself, Langer had a deep understanding of music's physicality, discipline, and meaning-making processes. “The real power of music,” Langer wrote in the *New Key*, “lies in the fact that it can be ‘true’ to the life of feeling in a way language cannot; for its significant forms have that ambivalence of content

which words cannot have.” She describes (instrumental) music as perhaps the most “untranslatable” of the arts: “the true nature of music” is “unconventionalized, unverbalyzed freedom of thought.” Music expresses the “unspeakable” by offering a shifting “kaleidoscopic play...a wealth of wordless knowledge.” To the responsive listener, “insight is the gift of music.” In its very shape or morphology—its form—music may present “vital impulse, balance, conflict, the ways of living and dying and feeling.” None of this can be adequately conveyed, not with the same detail nor truth, by words.

Mainstream philosophy and science have never fully engaged with the radical challenge Langer posed. She was an anomaly in her time and discipline. A Harvard-trained philosopher, long before Harvard admitted women, who published extensively in prestigious journals, she was the first woman to be admitted to the American Philosophical Association. Langer held a number of temporary academic posts but was offered a tenured position only when she was fifty-nine. The American-born child of German immigrants, she was privately educated, and did not regularly speak English until she was ten. Yet her translucent prose combines classical elegance with enviably colloquial wit, sometimes in the same sentence. In places, attempts to summarize her claims almost seem to violate them, for the medium—usually an exquisitely crafted metaphor—is the message; it evokes the “ineffable” in receptive readers.

Her work was endorsed by prominent figures such as A.N. Whitehead and Ernst Cassirer. Her “new key,” however, was not taken up by her intended interlocutors: Langer’s many direct and indirect references to Rudolf Carnap, Bertrand Russell, and the early Ludwig Wittgenstein make clear who they were. *Philosophy in a New Key* anonymously evokes, paraphrases, and challenges Wittgenstein’s claim that “the limits of my language are the limits of my world.” The book urged philosophy to welcome non-discursive forms such as ritual and art into the epistemological tent, which was high heresy at the time.

A decade later, however, during the paperback revolution of the 1950s, *Philosophy in a New Key* became a surprise bestseller, with over half a million copies sold. To general readers, the book is a dazzling introduction to the importance of signs and symbols, their origins and forms, myth, metaphor, and ritual. Without a background in rather insular philosophical controversies, however, Langer’s critical engagement with logical positivism would have hardly

registered. Instead, *New Key* was frequently, reductively heralded as an affirmation of feeling, which the gender politics of the time coded as feminine. Langer herself was perplexed and concerned by the book's popular reception, which failed to grasp the gravity of its claims.

She deserves a hearing now. Our world is made up of “wordless symbolism,” meanings “too subtle for speech.” Much of what we know is unspeakable, and language is but one expressive medium. We know more than we can tell, as the chemist-philosopher Michael Polanyi once put the point. Thus a tapestry of words, no matter its scale, whatever its predictive acumen, won't begin to cover the broad spectrum of human intelligence. Even a model of Alexandric scope—inclusive of everything that's been said since the dawn of language—would be, in the human sense, just more chatter from loquacious parrots.