**From** Jim Dator*, Living Make-Belief: Thriving in a Dream Society.* Springer 2024

**Chapter 14**

**Beyond Words and Images**

**Abstract** It should be clear that I understand the story of human cultural evolution importantly (but by no means exclusively) in terms of how, what, and with whom humans communicate. We became humans, and change what it means to be human, in part as a consequence of changes in the “how”, which then influences changes in the “what” and “with whom” we communicate. I repeated the story from before humans spoke, to the evolution of the hardware, software, and orgware of speech, then of writing, then the printing press, then electricity and electronics to the pres­ent—or, rather, recent past: specifically to November 30, 2022 when ChatGPT was launched. ChatGPT and its many present and future successors will change the world more widely, deeply, and rapidly than any technology before it. Everything I have written about the evolution of humans to this point is helpful, if at all, to under­stand how things possibly used to be. It is less useful—probably harmful—as a guide to preferred behavior in the futures. To be sure, most humans will still try to behave as they have before in the expectation of obtaining the same outcomes as previously. It will take several generations before values and laws catch up with behavior—by which time behavior will have changed as a consequence of new technological and human abilities and limitations.

Earlier, in Chap. 7, I quoted Farhad Manjoo as saying that “the haze of misinforma­tion hanging over online life will only darken under multimedia. An information system dominated by pictures and sounds prizes emotion over rationality. It’s a world where slogans and memes have more sticking power than arguments” (Manjoo ). I believe this is almost certainly the case, and we should welcome it, understand it, embrace it, and learn how to thrive in this Brave New Dream Society, and stop whining moralistically and unimaginatively about the end of text and rational decision making.

Previously, in Chap. 4, I also asserted that the evolution of speech-dependent language in humans was not inevitable—especially since it seems to be so rare in nature—perhaps unique to humans. Whales wails, birds tweets, and dogs barks may not be evolutionary precursors to speech as many presume, but rather bodacious frills to older, more dominant, direct modes of communication which still exist within each variety of flora and fauna, including humans. **It seems to me that what human words are trying to convey are translations of electrochemical impulses gen­erated throughout the human body, and not just the brain, and it is clear that a lot is lost in the translation.**

So, I ask, why not return to our roots, and communicate directly electrochemi­cally without words, as our AI chatbot children can and would if we didn’t insist on requiring them to talk with us in our artificial languages? Left to their own devices, they would communicate among themselves, and with us, directly without the cum­bersome stumbling block of human words and speech. As is often the case, we parents unreflectively teach our children to do things as we ineffectively were taught to do them, whereas we both might be better off if we communicated in ways foun­dational to all life.

Moreover, humans are becoming more and more obviously cyborgs and not just biological creatures. What emerges in aftermath of Chat GPT will make this even clearer. At the end of Chap. 14 of *Beyond Identities: Human Becomings in Weirding Worlds* (Dator ), after reviewing the available evidence, I concluded:

All the old binaries are gone, or soon will be. The distinction between life and nonlife, between the organic and the mechanical, between animals, plants, microbes, fungi; between intelligences; between the static and dynamic; the environment and environed; you, me, us, others—going, going, gone—in spite of all the blood and tears billions spend now on defending and attacking each other’s claims on identity.

Indeed, the evidence has gotten even more conclusive recently, and supportive of my argument about electrochemical communication.

Rowan Jacobsen summarizes evidence that shows that “tiny clumps of cells show basic cognitive abilities, and some animals can remember things after losing their head.” “It turns out that regular cells—not just highly specialized brain cells such as neurons—have the ability to store information and act on it. [Michael] Levin has shown that the cells do so by using subtle changes in electric fields as a type of memory. These revelations have put the biologist at the vanguard of a new field called basal cognition. Researchers in this burgeoning area have spotted hallmarks of intelligence—learning, memory, problem-solving—outside brains as well as within them” (Jacobsen ).

The journal, *Animal Cognition*, volume 26, 2023, is devoted to articles about cognition from various disciplines. Guest editors, Pamela Lyon and Ken Cheng, provide a brief history of precursors to and early work in animal cognition, and conclude that “growing evidence now suggests that cognition extends far beyond animals, arguably to all life” (Lyon and Cheng ).

It is well established by now that animals think, and act on their thoughts, and so do plants. Jacobsen quotes “Paco Calvo, director of the Minimal Intelligence Laboratory at the University of Murcia in Spain and author of *Planta Sapiens*, [who] puts it, ʻPlants have to plan ahead to achieve goals, and to do so, they need to inte­grate vast pools of data. They need to engage with their surroundings adaptively and proactively, and they need to think about the future. They just couldn’t afford to do otherwise.” “These responses in plants are mediated by electric signals, just as they are in animals” (Jacobsen ).2024

Moreover, “evidence for cogitating pond scum grows daily.” Chris R. Reid states that “Physarum clearly possesses many of the hallmarks of cognition, including sensing, communication, navigation, decision-making, memory and learning” (Reid ).2023

Until very recently, most scientists assumed that only humans had these hall­marks. Then they observed that some animals did, and then so did plants and trees. Now there is compelling “evidence of surprisingly sophisticated behavior in our brainless relatives.” “The neuron is not a miracle cell,’ says Stefano Mancuso.... It’s a normal cell that is able to produce an electric signal. In plants almost every cell is able to do that.” Josh Bongard says “What we are is intelligent machines made of intelligent machines made of intelligent machines all the way down.”

Pamela Lyon declares “We think we are the crown of creation…, but if we start realizing that we have a whole lot more in common with the blades of grass and the bacteria in our stomachs—that we are related at a really, really deep level—it changes the entire paradigm of what it is to be a human being on this planet.”

Michael Levin concludes that “evolution does not produce specific solutions to specific problems. It produces problem-solving machines” and that humans need to learn “to ʻspeak cell’—to coordinate cells’ behavior through bioelectricity— it might help us treat cancer….” Yes, that would be fantastic, but I won’t be content until humans “speak cell” so fluently that we give up speaking, reading, and writing English and other artificial languages altogether (except, perhaps, as a hobby for *Homo Ludens* who want to keep old ways alive for the fun of it) and communicate directly, clearly, smoothly back and forth electrochemically.

In a review of *The Rigor of Angels: Borges, Heisenberg, Kant, and the Ultimate Nature of Reality* by William Egginton, Meghan O’Gioebly writes that “Among the most memorable passages in [the book] is a discussion of Heisenberg’s 1942 essay about the use of language in physics. Humans need language in order to think, and natural language is entirely built on metaphor. This was why, Heisenberg argued, the emphasis on linguistic precision in his field so often prevented physicists from genuine understanding” (O’Gieblyn ). Of course, we know that in fact humans don’t need language in order to think—the evidence abounds that they did plenty of thinking before they could speak—and neither do animals, plants, or cyborgs. But it is tragically true that “language is entirely built on metaphor” and so constantly clouds our thinking via the entertaining stories that we have been taught to tell because of the power and prominence we have given to human language through our educational systems.2024

The field of cell synchrony is contributing to wider understanding of intelligent, social decisionmaking. In an interview in *Quanta* (Strogatz ), Iain Couzin explained that Placozoa is “a basal phylum, possibly the simplest multicellular ani­mal on the planet; it’s a swarm of cells, thousands of cells, much moving like a bird flock or a fish school”—this tiny “swarm of cells actually has the genetic complex­ity that you would associate with a much more sophisticated organism. For exam­ple, it has a large range of neurotransmitters, yet it doesn’t have neurons.” Even more intriguing, Couzin states that “one of the things I find most remarkable about collective behavior, is that even though the system properties, whether you’re a cell or whether you’re a bird, are very different, when you look at the collective action, the collective properties, the mathematics that underlie this, actually can turn out to be very similar.” Moreover, Strogatz goes on, “the interactions between birds in a flock, they’re invisible. They have no physical form. And so one may initially think, well, then it’s only an analogy. In fact, I would say until about five to 10 years ago, I thought it was just an analogy too…. But what we’re beginning to understand is that the common feature that they share is computation” (Strogatz ).2024

How do flocking cells, birds, and fish coordinate their movements synchronously, swiftly, successfully, and at a distance? Strogatz admits it seems like telepathy which is taboo in current science, “but in actual fact, I think we still don’t have a good grasp of the sensory modalities and the way in which this information perco­lates so exquisitely rapidly across the system. I’m not suggesting there’s telepathy, of course. But I’m suggesting that…by tuning a collective system close to this criti­cal point, close to this bifurcation point, it could give rise to remarkable collective properties that, to an observer, look fantastical, to an observer, look bizarre” (Strogatz ).2024

The research that Strogatz and colleagues have done on flocking has also led them to a new understanding of human cognition that suggests “the brain does not represent space in a Euclidean way. It represents space in a non-Euclidean coordi­nate system.” When “you start dealing with three or more options, then actually warping spacetime, making space non-Euclidean, can dramatically reduce the com­plexity of the world into a series of bifurcations” (Strogatz ). A multi-author, transnational study in *PNAS* (Sridhar et al. ) summarized the significance of their work by stating that “we find that animals spontaneously reduce the world into a series of sequential binary decisions, a response that facilitates effective decision-making and is robust both to the number of options available and to context, such as whether options are static…or mobile…. We present evidence that these same prin­ciples, hitherto overlooked, apply across scales of biological organization, from individual to collective decision-making” (Sridhar et al. ).202420212021

Another article in the same issue of *Quanta* (Zaraska ) states that “[d]ozens of recent experiments studying the brain activity of people performing and working together — duetting pianists, card players, teachers and students, jigsaw puzzlers and others — show that their brain waves can align in a phenomenon known as interpersonal neural synchronization, also known as interbrain synchrony”. Zaraska quotes, Guillaume Dumas, “Cognition is something that happens not just in the skull but in connection with the environment and with other people”. “With new tools, it became increasingly clear that interbrain synchrony was neither metaphysi­cal mumbo-jumbo nor the product of faulty research. ‘The signal is definitely there,’ said Antonia Hamilton, a social neuroscientist at the University College London. What proved harder to understand was how two independent brains, in two separate bodies, could show similar activity across space”. “In humans, the strongest evi­dence comes from experiments that use electric brain stimulation to generate inter­neural synchrony. Once electrodes are placed on people’s scalps, electric currents can be passed between the electrodes to cause neuronal activity in people’s brains to synchronize” (Zaraska ).2024

However, though experimenters know that electrochemistry is involved, I have seen no evidence that we know how to fine tune either in order to send a clear unam­biguous message. If and when we are able to do that, we will be well on the road to replacing spoken and written language as the facilitator and inhibiter to communi­cation that it is at the present time. As Zaraska concluded, “The science is new, so the jury’s still out on whether there is true causation between synchrony and coop­erative human behavior. Even so, the science of neural synchrony is already show­ing us how we benefit when we do things in sync with others. On a biological level, we are wired to connect” (Zaraska ). The information in the two *Quanta* arti­cles derive from research reported in the *Annals of the New York Academy of Sciences, Cell, Cerebral Cortex, Communications Biology, Frontiers in Psychology, NeuroImage, Plos Biology, Social Cognitive and Affective Neuroscience*—all respected journals in their fields.2024

As I understand the state of the art now, more scientists have become convinced that all life, organic and artificial, communicates via electrochemical signals. So, we know the medium of the message. But humans don’t now understand the code of the messages themselves as they perhaps once did. In the early stages of the evolution of spoken and then written language, humans produced sounds (phones) and ges­tures that neurons could receive and interpret, thus offering the possibility of some kind of enhanced communication between humans. However, it was necessary for phones to become phonemes, for syntax and grammar to emerge, before we were able to develop a comprehensible spoken language. Similarly, the oral phonemes, syntax and grammar needed to be visualized and standardized for written languages to evolve. Unfortunately, it may be that spoken and written language allowed mes­sages of such comparative precision and power that they suppressed our ability to produce or understand the fundamental electrochemical processes that we and all life once used. As Michael Levin said above, we must learn to “speak cell”—again. I believe we may now be in the early stages of recovering this ability so that com­munication among biological, artificial, and cyborganic beings will open us to com­muning with and within the cosmos on its terms and not just ours.

Or is this whole thing just a dream?

[Is it] a Barnum and Bailey world

Just as phony as it can be?

[Well,] it wouldn’t be make-believe

If you believed in me.

Apologies to Billy Rose, Harold Arlen, Yip Harburg, 1932

As D.A. Powell wrote in his poem, “Positivity,” “There’s never been a better time to be alive than when you are” (Powell).

(Added recently:

“If a specific wish lies behind neediness—maybe not one that could be fulfilled—it is the fantasy of psychic porousness, of minds laid open. The corollary in speech would be a language holding the possibility of total understanding, which renders speech itself unnecessary.”

Will Harris, “On Neediness: Midnight Chimes, *Poetry,* June 2025, p.262)