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Abstract

Polanyi and Transhumanism both place technologies in pivotal roles in bringing about *Homo sapiens'* species transitions. The question is asked whether Polanyi's emphasis on the role of technology in *Homo sapiens'* rise out of mute beasthood indicates that he might have been inclined to embrace the Transhumanist vision of *Homo sapiens'* technological evolution into a postbiological, techno-cyber species. To answer this question, some of the core commitments of both Transhumanism and Polanyi's postcritical philosophy are examined, especially as they bear on *Homo sapiens'* species transitions. The conclusion reached is that rather than being the next step dictated by the inner logic of Polanyi's thought, Transhumanism is actually the final conclusion of epistemological ideals he spent most of his career denouncing.

Keywords

Polanyi, Geertz, Kurzweil, Moravec, Transhumanism, posthuman, indwelling, frameworks of articulation, technology, tacit dimension, body, information

Our whole articulate equipment turns out to be merely a tool-box, a supremely effective instrument for deploying our inarticulate faculties.

—Michael Polanyi (1959, p. 25)

One finds a tantalizingly vague, yet highly suggestive, evolutionary account of the rise of *Homo sapiens* in Polanyi's writings, one that depicts our rise out of presapient antecedents as accomplished through our reliance on acoustic artifacts of our own making. This occurred, says Polanyi, when we, as a species, "invented" the tool of language to extend our evolutionarily crafted and bodily rooted intelligent passions into the world via the word, creating "by it a lasting articulate framework of thought" (Polanyi, 1958, p. 388). Polanyi's vision of our humanity arising through our evolutionary ancestors' externalizations of their own bodily passions—their own vocalized acoustic artifacts—is profoundly evocative. In essence, Polanyi identifies a series of "soft" technologizings of our bodies¹ as initiating our transition out of a bestial subsapient species. His view of humanity's arrival on the scene bears some significant similarities to a very recent outlook on our humanity known as Transhumanism. Polanyi and Transhumanism both place technology at the center of the species transitions that they deem most important in the history of humanity. Polanyi portrays the artifacts or "soft" technologies² of our protohuman ancestors as the fundamental means of their transitioning *into Homo sapiens*. The Transhumanists believe that technologies and information technologies in particular, are what will bring about our

transitioning *out of Homo sapiens*. This raises an interesting question: Given that they both recognize certain technologies as catalyzing monumental species transitions, had Transhumanism been a fully formulated outlook during his lifetime, might Polanyi have been drawn into Transhumanism's view of the role that information technology will play in evolving us out of our biologically based sapience?

I will begin by examining more closely Polanyi's account of how self-centered bodily agents gradually, but profoundly, amplified their bodily instincts and drives through creating and deploying a symbolic tool of intersubjective expression that eventually transformed their mere self-centered biological agency into a personhood bearing universal intentions (Polanyi, 1958, p. 389; Polanyi, 1959, p. 77).

Anthropogenesis and the Tools of Articulation

Most animals instinctively emit distinctive noises, such as squeals, howls, barks, calls, growls, chirps, songs, purrs, screeches, and so on. Chimpanzees are one of our nearest nonhuman ancestors and perhaps the most vocal of the apes, and they, like most animals, use such acoustic objects of self-expression to good effect: to intimidate, to calm, to warn, to

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gather attention of conspecifics, and even to signal, and so on.³ Such noises were doubtless also produced by our presapient ancestors, meriting thereby the title of the first *technologies* produced in the natural world because these ephemeral artifacts, although lasting only a breath's length, were nonetheless physical externalizations of bodily intentions extending these intentions causally into their social environment. On Polanyi's view, these lowly productions, these externalized *artifactualizations* of bodily instincts and passions, catalyzed our humanity's rise out of mute beasthood (Polanyi, 1958, p. 388).

Polanyi, in his chapter on "Articulation" in *Personal Knowledge*, discusses the interesting experiment conducted by the Kellogg family in which they adopted the 7½-month-old chimpanzee, Gua, and raised him with their own baby, Donald, who had just turned 5 months old. They were both raised in exactly the same way, and for their first 9 months together, each of them received the same intelligence tests, which revealed "a striking parallelism" in the mental development of the two. But at the age of 15 to 18 months, the intelligence of the Gua reached a plateau whereas Donald's mental development was just beginning to take off. Polanyi notes that at this same time Donald began to understand the speech of his parents and to speak himself, and thereby acquired "the capacity for sustained thought and enter[ed] . . . the whole cultural heritage of [his] ancestors" (Polanyi, 1958, p. 69). Polanyi takes up this observation about the development of Gua's and Donald's intelligence and applies it to the phylogenesis of human intelligence in general, claiming that "[m]an's intellectual superiority" over the animals "is almost entirely due to the use of language." He notes "the enormous increase of mental powers derived from the acquisition of *formal instruments* [italics added] of thought" depended "on such mute acts of intelligence as we once had in common with chimpanzees":

[O]ur mute abilities keep growing in the very exercise of our articulate powers. Our formal upbringing evokes in us an elaborate set of emotional responses, operating within an articulate cultural framework. (Polanyi, 1958, p. 70)

He suggests, further, that our mute intelligence, once ignited by the potentialities of linguistic articulation, "avail[s] itself of ever new opportunities to undergo a change that will make it more satisfying to its modified self" (Polanyi, 1959, p. 35).

Polanyi embraces a very "thick" conception of language—one similar to what Charles Taylor has dubbed a "Romantic-expressive" view of language (Taylor, 1980, p. 298)—wherein natural languages (i.e., mother tongues) are understood as historical sedimentations, artifacts socially constituted and socially mediated to children, which, over time, collectively permeate and pervasively restructure their consciousness. In essence, a mother tongue functions as an array of higher

order principles that harnesses the child's perceptual consciousness and instinctual intelligence, catalyzing deep transformations within its consciousness and ultimately engendering a self-reflexive articulate self-consciousness.⁴

Homo sapiens is a species of animal unlike any other in that it reflexively completes itself through linguistic expression. Polanyi would surely agree with the words of George Steiner: "We do not speak *to ourselves* so much as *speak ourselves*" (Steiner, 1971, p. 72). On this view, language and thought are not conceived as two independent, externally related domains, but rather as mutually constitutive and constraining. Put bluntly, Homo became sapient through becoming articulate: The cognitive, emotional, and imaginative capacities that distinguish our species depend crucially on language, on the acquisition of a mother tongue. The instinctual social behaviors of our hunter-gatherer ancestors were lured over generations and generations toward a deeper form of intersubjectivity, through indwelling the potentialities of the second-order⁵ and of the second-person latent in the socially constructed artifact of an articulate framework. The invention of language enabled our species to deepen and intensify its individuality through the use of linguistic tokens to represent, objectify, and distance itself from its own innate impulses and drives, to turn them into objects of higher order desires and beliefs, desires and beliefs bearing universal intent. The language-borne capacity to make innate passions and inclinations objects of critical assessment effectively decoupled *Homo sapiens'* trajectory into the future from the dictates of environmentally triggered instinct to a degree beyond the reach of language-less presapiens. In its passion to reach into new worlds of possibilities, *Homo sapiens* has been the only species to create a lasting artifact, a mother tongue, a symbolic framework, a technology of articulation, through which to press itself symbolically into higher forms of being-in-the-world, virtually bootstrapping itself into deeper first-person self-reflexivity, more robust second-person conviviality, and elevated third-person objectivity. By indwelling these artifacts of its own making—instruments that themselves are embodiments of our species' antecedent unformalized powers (Polanyi, 1958, p. 131)—*Homo sapiens* "equipped [its] tacit powers with a *cultural machinery of language* [italics added]" that intensified, transformed, and extended its native bodily intentionality into "a much increased range of potential thought" (Polanyi, 1983, p. 91).

Some Help From Clifford Geertz

Polanyi's tale of the evolutionary rise of mother tongues is of necessity speculative, and at times admittedly sketchy and vague. However, with a little assistance from Clifford Geertz (1973), it is possible to gain some insight into how Polanyi likely envisaged the co-evolution of articulate frameworks and *Homo sapiens*.

Geertz is a cultural anthropologist who has invested most of his life seeking to understand symbolic media and their

social role in the evolution and development of our common humanity. His research has convinced him that the traditional sequential account of human descent is dead wrong: “the prevailing view that the mental dispositions of man are genetically prior to culture and that his actual capabilities represent the amplification or extension of these pre-existent dispositions by cultural means *is incorrect* [italics added]” (Geertz, 1973, p. 82). What Geertz rejects here is the notion that the genetically complete Homo, arrayed with innate *mental* dispositions and capacities, was the prime mover of its subsequent social and cultural development. Recent evidence, says Geertz, indicates that the final phylogenetic phases of the history of the human “took place in the same grand geological era—the so-called Ice Age—as the initial phases of [human] cultural history” (Geertz, 1973, p. 47). It is now recognized that presapiens, such as Australopithecines, produced proto-cultures of tool making and hunting rites well over a million years before the rise of *Homo sapiens*. The final stages of the biological evolution of *Homo sapiens* therefore “occurred after the initial stages of the growth of culture,” so “[t]ools, hunting, family organization, and later, art, religion [*and articulate frameworks*] . . . molded man somatically,” indicating that cultural resources have been ingredient to, and thus are not subsequent to the emergence of human nature (Geertz, 1973, p. 83). There was a “reciprocally creative relationship between somatic and extrasomatic phenomena” (Geertz, 1973, p. 68) that was of crucial significance in the evolution of *Homo sapiens*. The slow emergence of culture through the Ice Age “altered the balance of selection pressures for the evolving Homo in such a way as to play a major role in his evolution” (Geertz, 1973, p. 47). This temporal overlap of genetic and cultural developments in the emergence of *Homo sapiens* reveals that human nature is naturally artificial—the product of social and cultural influences on the genetic evolution of our species.

Geertz points out that as one moves from lower to higher animals phylogenetically, behavior becomes increasingly unpredictable with reference to present stimuli. That is, most if not all of the behavior of animals lower on the phylogenetic scale arises from instincts that their evolutionary past has hardwired into their neural structures, making much, if not all, of their immediate responses to environmental stimuli species-typical and predictable. Things are different with *Homo sapiens*. Our “large brain and human culture emerged synchronically, not serially” (Geertz, 1973, p. 83), allowing culturally constructed meanings, not merely environmental stimuli and innate neuronal structures, to shape the behavior of the emerging *Homo sapiens*. This overlap makes an explanation of the early Homo’s behavior purely in terms of intrinsic (innate) parameters increasingly impossible and explains why the “human nervous system relies, inescapably, on the accessibility of public symbolic structures to build up its own autonomous, ongoing pattern of activity” (Geertz, 1973, p. 83).

If Geertz is right about this, then some key cultural sophistication dawned early on Homo’s evolutionary horizon giving

selective advantage to those individuals who could best exploit it—for example, the effective hunter, adept toolmaker, resourceful signaler and signal reader, and so on. These cultural skills would place new selective demands on the Homo’s genotype by favoring certain culturally augmented phenotypes that gave competitive advantage, and thus leaving them around long enough to push their genes into the future. Prior to the appearance of the truly sapient Homos, their ancestral genetic pool had been already selectively constrained by these soft technologies of cultural enrichment. Over time, the snowballing effect of culturally driven selection pressures would have produced vast stores of cultural skills for each generation to pass on to the next—a case of sensitive dependency on initial conditions, where evolutionary contingencies endowed the evolutionary ancestors of *Homo sapiens* with slightly superior phenotypic capacities for creating simple technologies and for offloading their bodily intelligence onto these technologies, creating a positive feedback loop of genetic and cultural development, where each stimulated and shaped the other to higher orders of complexity. In Geertz’s estimate, this dialectic explains the temporally correlated ballooning of the neocortex and the burgeoning of culture in *Homo sapiens*’ past (Geertz, 1973, p. 48).

On this reading, the dichotomy of nature/nurture has minimal application to human nature because cultural nurture was woven directly into the natural selective pressures sculpting what would become *Homo sapiens*’ genes. This is why we are now “incapable of directing our behavior or organizing our experience without the guidance provided by systems of significant symbols” (Geertz, 1973, p. 49). During the Ice Age, the subtle selective pressures arising from some basic cultural practices, forced our genetic ancestors more and more to rely more heavily on cultural sources to direct their conduct, which, over time increasingly loosened the grip of genetic and instinctual control on their lives, such that humans, were they to be totally deprived of an articulate framework, would be “unworkable monstrosities with very few useful instincts, fewer recognizable sentiments, and no intellect: mental basket cases” (Geertz, 1973, p. 49). Symbols, according to Geertz, “are not mere expressions, instrumentalities, or correlates of our biological, psychological, and social existence; *they are prerequisites of it* [italics added]”. (Geertz, 1973, p. 49). Clearly, Geertz’s account of anthropogenesis converges remarkably with Polanyi’s rather more freewheeling speculations on the same matter.

Posthumanity and the Technologies of Species Transition

We are now ready to turn our attention to the role of technology in the Transhumanist vision of *Homo sapiens*’ transition into a posthuman and postbiological successor species. Transhumanism is a recent, relatively unknown, but swiftly growing international and multidisciplinary movement of speculative science, philosophy, and technology. Its fundamental outlook is

techno-utopian, based on the belief that the convergence, and consequent accelerated advancement, of technological development will, in the near future, enable *Homo sapiens* to engineer an exit from its frail and feeble biological nature into a designer postbiological nature, a virtual posthuman species. Transhumanism is a strange attractor that draws together an array of techno-futurists with views whose underlying unity rests in a common commitment to what may be called “informational essentialism” and an optimistic-neutralist reading of technology.⁶ They believe in perpetual progress, spurning most traditional biological, genetic, religious, and intellectual constraints on progress, and have an implicit trust in science and technology to bring unlimited lifespan, intelligence, personal vitality, and freedom. In their view, our technological ingenuity has brought us to the place where we are posed to dissolve the bonds that tie us to nature’s ancient biological and accidental design (Vita-More, 2004, p. 2). We have matured, as a species, out of our evolutionary adolescence, to the point that we are ready to begin decommissioning the jerry-rigged and bug-ridden genome Mother Nature has bequeathed us.

Despite the usual incredulity that accompanies most people’s introduction to the tenets of this movement, a number of its most vocal advocates are widely recognized and deeply respected scientists and academicians, whose impressive pedigree has earned them immense funding from the U.S. Department of Defense and from the dot-com sector. The following is a sampling of just a few of these luminaries: Marvin Minsky, Toshiba Professor of Media Arts and Sciences, Professor of Electrical Engineering and Computer Science at MIT, and author of nine books, including the highly acclaimed *Society of Mind*; Hans Moravec, founder of the Mobile Robot Laboratory of Carnegie Mellon University, the largest robotics lab in the United States, presently Chief Scientist at Seegrid Corporation, and author of *Mind Children: The Future of Robot and Human Intelligence* and *Robot: Mere Machine to Transcendent Mind*; Ray Kurzweil, world-renowned inventor of numerous artificial intelligence (AI) technologies, member of the U.S. patent Office’s National Inventors Hall of Fame, and author of *The Singularity is Near: When Humans Transcend Biology*; Nick Bostrom, Director of Oxford’s Institute for the Future of Humanity; Kevin Warwick, professor of cybernetics at the University of Reading and author of *March of the Machines*; Frank Tipler, professor of mathematics, Tulane University, and author of *The Physics of Immortality*; David Chalmers, professor of philosophy and Director of the Center for Consciousness at Australian National University, and author of *The Conscious Mind*.

Transhumanists take their bearings on the future from the recent patterns of technological convergence and the accelerating pace of technological development this convergence has brought about. They interpret the civilized world’s warming toward technologies of human enhancement as setting the stage for the drama of participatory evolution they seek to enact, a drama in which *technology becomes evolution by*

other means (Kurzweil, 2005, p. 47). Their vision of the future is inspired by Moore’s Law and the nonlinear development of technologies of computation it describes, and they are particularly encouraged by the relatively recent merging of bio- and infotechnologies to create direct brain computer interfaces in humans (Callaway, 2009). Cyborgic coupling of mind and computer, the Transhumanists believe, is a step in the right direction, for it will be instrumental in creating the next generation of stupendously advanced brain–computer interfaces. However, there will be a point in the not-too-distant future, where the cognitive limitations of the human side of the interface will show themselves as impediments to the production of the next generation of intelligent artifact, signaling a threshold crossing where our computers will have become more adept at designing intelligent artifacts (i.e., *themselves*) than we are. When this occurs, intelligent artifacts will go it alone, designing and building new intelligent artifacts with smarter-than-human intelligence. Transhumanists refer to this near future threshold crossing as the “Singularity.” Once we create something smarter than ourselves, “any problems beyond that are not ours to solve,” says Transhumanist Eliezer S. Yudkowsky (quoted in Kurzweil, 2005, p. 35).

Interestingly, there is a deep moral urgency behind the Transhumanist project, one arising from a largely humanist sensibility. Although they retain some recognizably humanist goals, they reject the traditional humanist means of their procurement. They have become weary of humanist techniques directed toward transcending our baser natural limitations and inclinations, for example, self-discipline, delayed gratification, education, and other ego-decentering disciplines that humanist believe will produce within the agents who practiced them an array of virtues constitutive of an enhanced and reliably *more human* second nature.

To the Transhumanist, the undeniable facts that *Homo sapiens*—despite millennia of seeking to realize its best intentions through education, self-discipline, will-power, religion, social-engineering programs, and reform projects—are still killing each other in the most heinous ways, nations are still at war with each other, our cities and even our highest levels of government are still filled with crime and deception, and our bodies are aging mercilessly, racked with diseases, darkened with depressions, disordered by psychoses and deep anxieties, clearly indicate that all the techniques or soft technologies of humanist reform are not working. If all past efforts have failed to “de-bug” the product of Mother Nature’s best efforts, the time has arrived to take our nature into our own hands and amend the human condition. Outdated humanist techniques of *reforming* human nature must be replaced with new technologies—namely, genetic, robotic, information, and nanotechnologies (GRIN)—that will *transform* human nature. These technologies will finally enable us to take our own species, the botched “work-in-progress” of the Blind Watchmaker, and reengineer it into something new, a superior successor species whose nature is the intentional product of our own highest design ideals. Strategic deployment of the most

advanced technologies will accomplish what even the most radical utopian ideologies and the most totalitarian social reform techniques of the past could not. As David Pearce (cofounder of the World Transhumanist Association) claims, “. . . only high-tech solutions can ever eradicate suffering from the living world. Compassion alone is not enough” (Cronopis, 2007). Transhumanists believe high tech is our only hope of escaping extinction: technologically evolve or biologically dissolve!⁷

“What awaits us,” says Hans Moravec, “is not oblivion but rather a future which . . . is best described as ‘postbiological’ . . . a world in which the human race has been swept away by the tide of cultural change, usurped by its own artificial potency” (Moravec, 1988, p. 1). Transhumanism has a distinct contempt for the biological body, viewing it (at best) as a temporary and expendable prosthesis, something it is better to be delivered from than to inhabit.⁸ Human flesh is of little concern to, or use for them, teeming as it does with corrupted (DNA) codes that get transmitted across generations with “a lethal genetic disease (ageing)” and other nasty Darwinian legacies (Cronopis, 2007). They rail against the body because it has the finger prints of the bumbling Blind Watchmaker all over it. “Biology is not destiny. It was never more than tendency. It was just nature’s first quick and dirty way to compute with meat” (Kosko, 1994, p. 34) says Bart Kosko, a Transhumanist who is professor of Electrical Engineering at the University of Southern California. Were our identities not detachable from the botched flesh of their first installment, we would all be condemned to dissolve with our mortal coils.

Transhumanists pursue a cyber-immortality that will require a shift of material substrate, from our vulnerable and biodegradable protein-based platform to a more durable, likely nanotech engineered, platform. After all, minds in protein-based bodies have a rather short s[h]elf-life. Thus Kurzweil (2001) confesses, “I regard the freeing of the human mind from its severe physical limitations of scope and duration as the necessary next step in evolution.” The ultimate freedom from our species’ limitations is predicated on the rather fantastic project of scanning the human brain and thereby rendering it into “thousands of trillions of bytes” (Kurzweil, 2005, p. 444) and then “reinstantiating those details into a suitably powerful computational substrate” (p. 199). “This process” according to Kurzweil, “would capture a person’s entire personality, memory, skills, and history” (Kurzweil, 2005, p. 199). Creating such digital doubles of ourselves will allow us to make backup copies of ourselves and to upload them into “completely realistic virtual environments” (Kurzweil, 2005, p. 199), ensuring thereby that “[w]e will gain power over our own fates. Our mortality will be in our own hands” (Kurzweil, 2005, p. 9). Transhumanists believe that the only way to ensure our future survival is to engineer our release from the vicissitudes of biology, that is, to become software ourselves.

The very idea of “software selves” reveals how fundamentally the Transhumanist project rests on the assumption that “cognition and computation are species of the same genus” (Pylyshyn, 1986, p. viii)—the assumption behind the popular claim that “mind is to the body as software is to hardware.” Of course, this outlook comes from the cognitive sciences where it is somewhat of an orthodoxy. It is a reductive viewpoint in that it implies that the impersonal, rule-governed state transitions of neural patterns instantiated in the human central nervous system (CNS) are of the same genus as thoughts about them. Reducing the human mind to these abstract and informationally formatted effigies, however, is what makes human mentality plausibly amenable to scientific objectification, explanation, and manipulation. Transhumanism is so wedded to this assumption that if human identities cannot be reduced to their CNS’s patterns of information and information processing, there is little reason to expect their much vaunted posthuman future.

Here an interesting *similarity* between Polanyi’s account of the transition into *Homo sapiens* and the Transhumanist project of transitioning out of *Homo sapiens* comes clearly to view. For Polanyi, as we have seen, the transition into *Homo sapiens* comes via the word, that is, through the dawning of an articulate framework (a mother tongue) on the presapien social horizon that evoked in them a multitude of new intellectual capacities and aspirations and released them from the closed circuit of environmental stimuli and instinctual responses. The transitioning out of *Homo sapiens* heralded by the Transhumanists, will come not through the word but through the byte, that is, by first merging our minds with information technology and finally by translating our minds into stings of binary code to facilitate their transferring and uploading to platforms of cyber-immortality. In both accounts, transitions are enabled by virtual artifacts of human provenance. Is this evidence of a natural progression from the role that Polanyi assigned to the technology of the spoken word in anthropogenesis to the role that Transhumanists expect information technology to play in the advent of posthumanity, such that had Polanyi lived long enough, he too, might have been caught up in the Transhumanist project? This is an interesting question and one I would like to probe more directly in the final half of this article.

Was Polanyi Exploring Posthuman Eventualities?

There is no doubt that Polanyi, at times, said things that might be construed as evidence of an incipient Transhumanism. After all, he does make reference to Teilhard de Chardin’s notion of the “noosphere” (Polanyi, 1958, p. 388). And Teilhard de Chardin has recently been celebrated by the Transhumanists almost as their patron saint (Steinhart, 2008). As well, on the last page of *Personal Knowledge*, Polanyi says something that might be taken as suspiciously suggestive of musings toward the posthuman:

So far as we know, the tiny fragments of the universe embodied in man are the only centres of thought and responsibility in the visible world. If that be so, the appearance of the human mind has been *so far* the ultimate stage in the awakening of the world . . . [All the forms of life leading up of Homo sapiens] “may be seen engaged in the same endeavor towards *ultimate liberation* [italics added]” (Polanyi, 1958, p. 405).

However, for a number of reasons, I don’t think the recent appropriation of Teilhard de Chardin by the Transhumanists or Polanyi’s earlier appropriation of “noosphere” from de Chardin should be taken as an invitation to reread Polanyi as looking forward to a posthuman future.

First, in the quotation above, Polanyi links his postcritical philosophy to the concerns of religion, something relatively rare in his work. He does the same thing on the last page of *Tacit Dimension*. In both places, Polanyi is not pointing his readers to a technologically engineered postbiological future wherein they can expect to become immortal software selves. Rather his goal is to make clear the degree to which his postcritical philosophy reopens the conceptual space shut down by the inhuman epistemological ideals of critical thought and provides a fiduciary framework wherein the commitments of a religious outlook could flourish. Thus, the “so far” and the “ultimate liberation” in the above quotation should be understood as Polanyi intimating that the human aspirations for resurrection or an afterlife need not to be taken as antithetical to the evolutionary interpretation of our species’ past that his *postcritical* philosophy is founded on.

Second, Polanyi’s use of de Chardin’s expression “noosphere” clearly refers to a *past* accomplishment: “Our [species] as a whole achieved such personhood by creating its own noosphere: the only noosphere in the world” (Polanyi, 1958, p. 389). Polanyi pinpoints the noosphere’s arrival as occurring on “man’s sudden rise from mute beasthood” when our ancestors “invented language and created by it a lasting articulate framework of thought” (Polanyi, 1958, p. 388). Polanyi nowhere mentions de Chardin’s “Omega Point,” which signifies the universe’s final state of stupendous technological proliferation and integration, a future much more in line with Transhumanist speculations regarding a post-Singularity universe.

Aside from these particular issues that might conceivably lead one to imagine that Polanyi’s thought might be sympathetic to Transhumanist techno-utopianism, the overall sensibility that characterizes Polanyi’s postcritical philosophy—for example, his discussions of the body and the centrality of the tacit dimension in all things human—provides ample evidence that despite some apparent similarities between Polanyi’s account of the *artifactual origination* of human nature and Transhumanism’s vision of the *artifactual elimination* of human nature, Transhumanism, rather than representing the next step in the development Polanyi’s understanding of human nature and destiny, in fact, represents the culmination of

metaphysical commitments and epistemological ideals he spent his whole career seeking to debunk. Ironically, this will become clearer by exploring another element in Polanyi’s thought that also bears some similarity to Transhumanist doctrines, but which on further examination reveals the vast distance between his postcritical anthropology and the in-formatic essentialism that underwrites Transhumanist speculations concerning the posthuman.

Body, Indwelling, and Information

Polanyi makes some rather provocative claims concerning the use of technologies and human intelligence:

When we use a tool or a probe and, above all, when we use language in speech, reading, writing, we extend our bodily equipment and become more effective and more intelligent beings. All human thought comes into existence by . . . mastering the use of language. Little of our mind lives in our natural body . . . (Grene, 1969, pp. 159-160).

I want to focus on his particular claim that “little of our mind lives in our natural body.” This, on its surface, might be taken to imply two things: first, that as a species and as individuals, humans have channeled much of their intelligent capacities into, and thereby offloaded them onto, external artifacts—whether virtual or physical, and second, that the body human is largely marginal to the mind’s existence. The first implication certainly squares with Polanyi’s understanding of how our evolutionary ancestors distinguished themselves by collectively creating and exploiting external, symbol-laden media to supplement and extend further their body’s ingress into the world. This admittedly indicates a real affinity between Polanyi and the Transhumanist: Both recognize humans as capable of symbiotic dovetailing their intelligence with external technologies—something most Transhumanists recognize as an early cyborgic first-step toward our complete absorption into technology.⁹ But recognizing this, we must not overlook the substantive differences that separate their respective understandings of how this merging of mind and machine is enacted. The difference becomes obvious when we turn to the second implication mentioned above, that is, whether, in their respective understandings of mind, the body is marginal.

For Polanyi, one’s body occupies an absolutely and irreducibly unique place in one’s world and plays an utterly essential and inextinguishable role in the rise and subsequent expansion of one’s mental life. Although, on Polanyi’s view, our ancestors surrendered their bodies’ mute intelligence to an artifact of their own making (i.e., a symbolism of linguistic articulation), relying on it—Pygmalion-like (Polanyi, 1958, p. 104)—as an external guide, the mental transformations this brought about in no way diminished the significance and necessity of their bodies. Polanyi understands our critical mental capacities

not as separate from our mute, a-critical bodily aptitudes and skills, but as modifications, extensions, and elaborate sophistications of them. In effect, he replaced Descartes' *Cogito ergo sum* ("I think, therefore, I am") with *Ego ergo cogito* ("I do, therefore, I think"); the mental "I think" arose from a more ancient bodily "I can." To better appreciate the absolute centrality of the body in Polanyi's account of the enabling conditions of a human mind, we need to take a closer look at his notion of "indwelling."

Polanyi's conception of "indwelling" arises from his distinction between subsidiary and focal awarenesses. Drawing on insights from the Gestalt psychologists and Merleau-Ponty before him, Polanyi recognized that consciousness, perception, and cognition have a "from-to" structure whereby a person attends from certain things (what Polanyi calls "subsidiary particulars") to other things (what Polanyi calls "comprehensive" or "focal" entities).⁹ Subsidiary awareness is the awareness we have of things we attend *from*; it denotes our awareness of things that lack immediate interest and thus can serve unobtrusively to direct our attention toward what possesses our immediate interest, namely an intentional focal object. Awareness is subsidiary according to how it *functions*, that is, how it subserves attention to a focus. Polanyi's example of an individual using a hammer to pound in a nail clearly illustrates these awarenesses in action. The individual seeking to drive a nail with a hammer attends to both the hammer and the nail, but in different ways. She is aware of the hammer only in terms of the effect it is having on the nail's position. When she swings down the hammer she does not feel that the hammer's handle is striking the palm of her hand, but that the hammer's head has struck the nail—she senses the world through the hammer's action. As she relies on the hammer to drive the nail, she is subsidiarily aware of the feelings in her palm and fingers holding the hammer as they bear on or merge into her focal goal, that is, sinking the nail (Polanyi, 1958, p. 55).

Focal and subsidiary awareness are defined in terms of each other: they are polar contraries as the north and south poles of a magnet. Even as one cannot have a magnet with only a south pole or a north pole, one cannot have an awareness that is only subsidiary or focal. To eliminate either is to eliminate both. All conscious human awareness has this from-to structure that effectively creates an ineradicable opacity right in the heart of consciousness. We can never be focally aware of *all* that our focal awareness depends on. It is structurally impossible for consciousness to level itself out on the focal plane by eliminating its subsidiary underpinnings—so our explicit focal knowledge will always be funded by factors of which we are not and cannot be explicitly aware: we will always be aware of more than we can focally identify or justify.

The body has a position of primacy within the framework of this bi-polar field of human awareness, according to Polanyi. The special character of our body lies in the fact that we know it almost exclusively by attending *from* it to other things, by relying on our subsidiary awareness of it for attending to

something else (Grene, 1969, p. 159). One's body is not just another object among other objects. Rather our body is our aboriginal subsidiary base *from which* we attend. Everything we encounter, including portions of our own body, we gain access to *from* our body. We live our bodies as the *focally recessive* but always-already-there source of native subsidiary awareness that tacitly funds all our focal concerns. Our awareness of our body as we go about our daily tasks "is the paradigmatic example of subsidiary awareness" (Grene, 1969, p. 183). That is, by focally ignoring our body, even while decisively depending on it, we are opened to a world of focal otherness. Our bodies naturally disappear experientially even as they transparently support and direct our intentions world-ward.¹⁰ Because our body is the transitive self-effacing ground of our being-in-the-world, our consciousness is primarily outwardly directed. Were our bodies to focally magnetize our attention, we would close ourselves off from the world, for our bodies would no longer serve subsidiarily as the self-effacing enabler of attention to otherness.

As Polanyi says, there are "bodily roots [to] all thought" because the body is always our originary matrix of subsidiary awareness (Polanyi, 1983, p. 15; Grene, 1969, p. 147). The body, as it were, "comes all the way up"¹¹ as the enabling constraint that conditions and qualifies our higher order, language-borne intentions. If our consciousness *necessarily* pivots to its intentional objects *from* subsidiary awareness of our body, then an ineliminable tacit dimension undermines Transhumanism's discarnate computational/informatic metaphysics, revealing that the body is not merely, as they maintain, a liability to be on guard against or a biodegradable prosthesis we would do well to be liberated from, but a fundamental condition of the possibility of human mindfulness.

Moreover, because of the world-ward trajectory of our bodily intentionality, our native base of bodily subsidiaries is not static, but expands massively as we absorb into it awareness of particulars gained from treating nonbodily entities—whether intellectual or physical—as we treat our bodies: "all meaning known outside is due to our subsidiary treatment of external things as we treat our body" (Grene, 1969, p. 183). In this regard, Polanyi speaks of "indwelling" to denote how we augment, modify, and extend our bodily intentionality to more adequately address and engage focal realities. We *indwell* external artifacts when our focal attention is a function of the integration of our subsidiary awareness of their particulars with the subsidiary awareness we have of our own body. We expand our bodily synthesis and engender new capacities by splicing external media into the corporeal fold of our bodily "from-to" awareness: "Every time we assimilate a tool to our body our identity undergoes some change; our person expands into new modes of being" (Polanyi, 1959, p. 31). "[T]he inarticulate mental capacities developed in our body by the process of evolution" (Polanyi, 1958, p. 389), that is, our bodily drives and passions, "are refashioned and amplified into something new by [indwelling] words" (Polanyi, 1958, p. 194). Even as a blind person extends his awareness and intentions

into the world through indwelling the subsidiary particulars of a probing cane's varying pressures in his hand, Polanyi believes that "to use language in speech, reading and writing, is to extend our bodily equipment and become intelligent human beings," because when we learn to use language, we indwell or extend our bodily subsidiary awareness into the cultural heritage to which language opens access, that, in turn, develops "new faculties in us," making us grow "into a person seeing the world and experiencing life in terms of this outlook" (Grene, 1969, p. 148).

Indwelling is therefore *not* a neutral action; it changes us (Grene, 1969, p. 134). When we indwell something, whether technology or theory, it does things to us even as it does things for us. We personally dispose ourselves and become vulnerable to unintended modifications of our subjectivity when we "make a thing form an extension of ourselves through our subsidiary awareness of it" (Polanyi, 1958, p. 61). What we indwell can profoundly shape our outlook and experience, transforming not just the direction and reach of our operative intentions, but existentially modifying our subjectivity such that who we become and our way of being in the world subtly shifts by undergoing varying degrees of transmutation.¹² Polanyi's rich and nuanced account of our bodily being in the world and its phenomenological expansion through indwelling sharply contrasts with both Transhumanists' trivialization of the body as something to be completely transcended and their purely neutralist reading of technology. Polanyi would repudiate the former as categorically self-defeating, and he would undoubtedly condemn the latter as woefully naïve and entirely inadequate.

To claim, as most Transhumanists do, that disincarnate information pattern alone constitutes our essences,¹³ is to assume the possibility of a wholly tacit dimensionless mind, a mind that bears marked resemblance to that intelligence, which Laplace imagined would be required to reduce the entire history of the universe to a formal equation. Laplace's fantastical construct of a tacit-dimensionless mind is nothing other than Descartes' "Ghost in the machine" writ large, although the ghost in this case is not an instance of *res cogitans*, but an information processing machine. The Laplacean Mind is what today we would call a *virtual* machine that generates inferences about future and past configurations of matter by using the laws of physics as its algorithms, and by using an atomic topography as its array of symbols representing initial conditions. Here, we have a computational *cogito* that is informationally transparent, bearing no tacit dimension, no "from-to" intentionality—it is "to-to" all the way through—algorithmically moving from one formal data structure to another. To even call this a *mind* is a supreme act of gratuitous generosity. Polanyi argued that this "intelligence" would know nothing of interest to anyone because it would merely mechanically compute over an objective symbol domain of entirely explicit and formal data structures. Bearing no body of passions, needs, satisfactions, vulnerabilities, potentialities, or sensory *Gestalten*, to attend from, this "Mind" would

"pay equal attention to portions of equal mass," which means that "not in a thousand million lifetimes would the turn come to give man even a second's notice" (Polanyi, 1958, p. 3). The Laplacean Mind, being eternally locked in focal fixation, just could not give a damn about anything, including human beings (or even the validity of its own computations for that matter).¹⁴

The whole notion that intelligence and human selves can be rendered, without essential remainder, into bodiless informatic data structures would strike Polanyi as utterly ludicrous. In his view, the symbolic formalism on which the very notion of data structures depends is "itself but an embodiment of our antecedent unformalized powers—an instrument skillfully contrived by our inarticulate selves for the purpose of relying on it as our external guide" (Polanyi, 1958, p. 131). Thus, information theory is a product of the tacit powers of human intelligence, and the focal informatic data structures it gives us access to, have meaning only to the extent to which they are tacit integrations of persons' subsidiary awarenesses—otherwise they mean precisely nothing. Moreover, the individuation of informational patterns is a focal achievement: an abstraction performed by an embodied person attending *from* a subsidiary awareness that is a fusion of *both* the conceptual constraints of a formal theory and some material base's perceptual particulars *to* their integrated focal pattern or meaning. Information patterns are not freestanding natural kinds; they are, in fact, objectively meaningless transmissions of energy when not individuated within a person's focal awareness. Consequently, information patterns are focal accomplishments of intelligence or consciousness, not what the Transhumanists assume they are, that is, things that on their own could support properties of intelligence or consciousness. Nor can they serve as the basic building blocks of mind, consciousness, or the human point of view because, lacking intrinsic identity conditions, they arise to individuation only *for* minds, *within* consciousness, and *from* the human point of view.

The "informationalization" of human identity required for uploading selves into a posthuman cyber-immortality, Polanyi would understand as depending crucially on a tacit framework (Grene, 1969, p. 156)—a tacit framework that would be surrendered eternally by those selves so uploaded. The tacit dimension is not computable; it just does not compute. These software selves therefore, having been "unplugged" from the tacit wisdom and workings of their bodies to become tacit-dimensionless focalities, would *virtually* become the ontological correlatives of critical philosophy's epistemic ideals, ideals Polanyi spent his entire career seeking to demythologize.¹⁵ As he tirelessly pointed out, the quest to meet these inhuman and misguided epistemological ideals would "denature our image of man" so fundamentally that it would present us with a posthuman world, "a world in which he himself does not exist" (Polanyi, 1958, p. 380).

We see then that were it even technologically possible to realize the Transhumanist dream of translating our minds into

a purely informational format for digital uploading to a super-computer, a possibility Polanyi would adamantly contest, it would mean transposing everything of one's intelligence into focal digital structures, that is, strings of binary code, resulting in a wholesale erasure of the tacit dimension, leaving us bereft of the unspecifiable and indeterminate yet absolutely necessary focal ignorance that opens human intentionality to the subtle subsidiary suasions of new yet hidden meanings and realities.

How would heuristic/logical/persuasive gaps be traversed in a posthuman "world" where "minds" are formatted in purely formal informational patterns? What would become of creativity or imagination or problem solving?¹⁶ Would the future race of artifactual software selves have the wherewithal to realize epistemic and moral autonomy? That is, would the worldviews they were uploaded with be focally fixed as permanent fixtures of their tacit dimensionless silicon subjectivities? Would they be able to break free of the worldview they embraced when uploaded? In the posthuman world of digital selves, all will be focally formatted patterns of information virtually and completely free of bifurcated from-to awareness. But if Polanyi is correct, *paradigm shifts don't compute*: "Major discoveries [i.e., paradigm shifts] change our interpretive framework. Hence it is logically impossible to arrive at these by the continued application of our previous interpretative framework" (Polanyi, 1958, p. 143). To cross the logical gaps that separate us from new paradigms, we must rely on a thick substrate of subsidiary awareness that can fund new focal attractors and stabilize them into new worlds of meaning. As reality's indeterminate excesses overflow the focal categories holding a paradigm in place and tacitly reshape the focal awarenesses of those devotees who inherited the paradigm, these subceived excesses secretly craft the subsidiary awareness of a new generation ripe for a focal revolution.

But will there be new generations in this postbiological paradise? In our pre-Singularity *material* world, paradigms typically die with the old guard, but in the fleshless post-Singularity *software* "world," the old guard will have surrendered their bodies and have signed on for cyber-immortality, permanently disabling paradigm shifts. Ironically, at least from Polanyi's point of view, the Transhumanists' radical vision of ultimate liberation from their biological form of intelligence, would, were it possible to realize, bring about their eternal consignment to the most static of conservatismisms.

I began this essay asking the question, if Polanyi had lived long enough to encounter Transhumanism as a fully articulated option, would he have been tempted to move in its direction. After all he presents a vision of the crucial epoch of anthropogenesis as dependent on and driven by the emergence of "the cultural machinery of language" (Polanyi, 1983, p. 91), the soft technology of the word, a mother tongue. Would not the internal import of this perspective have led him to see that, given the stupendous technological advances already present and the epic ones just around the corner, the

next species transition will take us into a form of intelligence beyond the biological? My investigating the general outlines of Polanyi's account of the word's role in our species' transitioning into *Homo sapiens* and the byte's role in the mainline Transhumanist account of our species' transitioning out of *Homo sapiens*, my exploring Polanyi's account of indwelling, where it places our bodies in the constitution of our mentality and identity, and what it implies about information patterns and the role Transhumanists assign to them, indicate that, from Polanyi's point of view, a posthuman future would not be the next step in our humanity's self-directed evolution, but would rather be the final step in our species self-immolation (Polanyi, 1983, p. 4)—a Faustian bargain, where instead of selling our souls to the devil, we surrender our body's tacit dimension to the inhuman ideals of critical thought to *virtually* become them.

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Notes

1. Polanyi (1958) speaks of evolutionary stages in which active centers of life instrumentalize parts of their bodies to further extend their environmental efficacies (pp. 387-390).
2. I'm using the term *technology* loosely in this essay to refer to anything, whether material or ideal, that is used to enhance, augment, or extend native human capabilities.
3. Such instinctive animal signaling is a nonintentional and mechanical output and physically linked to some environment-triggered state of arousal.
4. This view contrasts sharply with the rather simplistic linguistic rationalism (still holding many in its thrall) that represents a mother tongue as an external utility or "app" that enables the private "factory equipped" *mentis lingus* or so-called "language of thought" to access the public domain of extracranial communications. This facile view of thought as a purely private affair and of language as merely thought's ticket to the public has dominated the speculations of modern linguistics, philosophy of mind, and most recently, evolutionary psychology. Clear expressions of this view can be found in Jerry Fodor's (1975) *The Language of Thought* and Steven Pinker's (1994) *The Language Instinct: How the Mind Creates Language*.
5. That is, the potentialities of making certain mental acts or states the objects of certain other mental acts, for example, fearing that one might die, or hoping that one's belief in immortality is true, or wanting to want to feel happiness for someone else's success, and so on.
6. By "informational essentialism," I mean a type of neo-Platonism where instead of immaterial Forms defining identities, inFOR-mational patterns are what define identities; and by "neutralist

accounts of technology,” I mean accounts of technologies and their users as externally related such that the users’ identities are not altered through their use of the technologies. Transhumanists view technologies as neutral tools, the use of which changes only that to which the technologies are applied. As we shall see, most of them believe our identities are capturable as information pattern profiles that can, in principle, be neutrally transferred to different hardwares (They do recognize that our *species will change* from Homo- to Cyber-sapiens when we are transferred to more durable hardware, but ironically, they presume that when this occurs, our *selves*, our essential identities, will not change).

7. Mark Walker (2009) claims “technological advancement means there is a high probability that a human-only future will end in extinction.” In his 2009 *Spiral* article “Ship of Fools: Why Transhumanism is the Best Bet to Prevent Extinction of Civilization,” he argues that because technologies of “person-engineering” are inevitable and just around the corner, we must all support the Transhumanist project so that the good guys get a “leg up” on the rogue terrorist who will surely not hesitate to use technologies of person-engineering for nefarious purposes.
8. Kurzweil (2005) notes that “Our thinking is extremely slow: the basic neural transactions are several million times slower than contemporary electronic circuits. That makes our physiological bandwidth for processing new information extremely limited . . .” (Kurzweil, 2005, p. 9).
9. I noted in an earlier article (Doede, 2008), “Polanyi in the Face of Transhumanism” that under the large umbrella of Transhumanism, there are some proponents who are more interested in amplifying human bodily potentialities through implanting technologies than in “surrendering their fleshly embodiment to the demands of pure digitality,” and in regard to this soft-core sector of Transhumanism, I suggested that Polanyi might have had sympathies, given that he viewed “mind, body, and tools as being on very intimate terms with each other” (p. 37).
10. For a brilliant discussion of the human body’s experiential disappearing, see Drew Leder’s (1990) *The Absent Body*.
11. See Doede (1994) “The Body Comes All the Way Up.”
12. Polanyi comments on how a child’s indwelling of an articulate framework (i.e., a mother tongue) brings the child into a firmament of ideals, values, and obligations that can decenter its ego and cause it to “unfold into forms of existence more satisfying to its transmuted self” (Polanyi, 1959, p. 99), bringing into being “an intelligent person, reasoning with universal intent” (Polanyi, 1958, p. 395).
13. Moravec contends, “Pattern-identity . . . defines the essence of a person, say myself, as the pattern and the process going on in my head and body, not the machinery supporting that process. If the process is preserved, I am preserved. The rest is just jelly”. Moravec recognizes that this position “has clear dualistic implications—it allows the mind to be separated from the body” and thus yields “the ability to copy [the informational pattern] from one storage medium to another” giving the essence of a person “an independence and an identity apart from the machinery that runs the program”

(Moravec, 1988, pp. 117-118.). According to Tipler, “the human mind—and the human soul—is a very complex computer program. Specifically a ‘person’ is defined to be a computer program which can pass the Turing test,” Tipler, 1994, p. 125). Minsky (1996) claims,

A person is not a head and arms and legs. That’s trivial. A person is a very large microprocessor with a million times a million small parts, and these are arranged as a thousand computers . . . The most important thing about each person is the data, and the programs in the data . . . [S]ome day you will be able to take all that data, and put it on a little disk, and store it for a thousand years, and then turn it on again and you will be alive in the fourth millennium or the fifth millennium. (Lecture at Nara, Japan, as quoted in Hayles, 1999, pp. 244-245)

I suspect the reason why most Transhumanists appeal to digital forms of information processing and have shied away from linking human identity to analog forms of information processing (e.g., neural networks) is that the former, but not the latter, support medium independence and enables neutral transference of informational patterns—features essential to their quest for immortality.

14. Here I’m alluding to John Haugeland’s (1979) excellent discussion of AI and natural languages (p. 619). Meaning and formalization, Polanyi claimed, are inversely related such that increases in formalization bring with them decreases of meaning, indicating that the more formal our approach to something is, the more we will have to rely on our tacit awareness to connect the formalism to something we recognize as meaningful (Polanyi, 1958, p. 86, p. 119). Of relevance too is his interview with *Psychology Today*, where Polanyi pointed out that “meaning cannot be introduced by a computer, because the computer can only operate with focally known elements. [A computational system could] never reproduce two different levels of awareness” (Hall, 1968, p. 67).
15. Polanyi spoke of how critical thought’s epistemological ideal of absolute objectivity “requires a specifically functioning mindless knower” (Polanyi, 1958, p. 264).
16. Polanyi notes that problems, such as information patterns, are not freestanding natural kinds, but come into being only for a point of view in-formed by tacit commitments (Polanyi, 1983, pp. 22, 75, 87).

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Bio

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