On Naturally Embodied Cyborgs: Identities, Metaphors, and Models

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This paper examines a specific appeal to philosophical anthropology—Andy Clark's—and the role it plays in shaping his account of "our fundamental cyborg humanity." By focusing on the theme of embodiment, we also inquire into how phenomenology might benefit from Clark's account as well as how Clark's account might benefit from further engagement with phenomenology. Throughout, we explore inter- and intra-disciplinary questions that highlight the contribution the philosophy of technology can make to our understanding of embodiment and philosophical anthropology.

No prints can come from fingers, if machines become our hands.
—Jack Johnson, "The Horizon Has Been Defeated"

1. Introduction

In order to discern what it is to be human, we are challenged to explore the promises and implications of recent technological developments and to synthesize recent cognitive science and philosophy of mind research. In *Natural Born Cyborgs: Minds, Technologies, and the Future of Human Intelligence*, Andy Clark provides an account of our nature—as cyborg—that accepts this challenge. Moreover, Clark's account links new conceptual resources to a fundamental theme—philosophical anthropology—that runs deeply and persistently throughout the history of philosophy. Visions of human potential, human limits, human purpose, and human flourishing have always revolved around conceptions of our fundamental nature; and conceptions of this nature have always been affected by metaphors and models that emerge out of the realm of invention and action. But, rarely have such discussions been as informed by the drive for interdisciplinary and empirical confirmation as they are in Clark's account.

In order to appreciate Clark's position fully, it is helpful to clarify its relationship to classical phenomenology. Clark acknowledges his intellectual debt to Maurice Merleau-Ponty and Martin Heidegger in his earlier publications, including his 1997 work, *Being There: Putting Brain, Body, and World Together Again*. Indeed, Clark and phenomenologists have provided analogous meta-philosophical accounts of intellectual history

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and made analogous methodological proposals to remedy its deficiencies. Meta-philosophically, they represent the dominant strands of philosophy as having been led astray by three erroneous prejudices: that mind and body are separable in some fundamental sense; that mind is endowed with the executive function of controlling the body; that our interactions with the world don't transform in any significant sense the presumed stability of these previous two foundational relations. Methodologically, they contend that two emphases can serve as correctives: treat intentionality ecologically; illuminate the differences between experience as it has been conceptualized and experience as we actually undergo it. What Clark and phenomenologists (and others, such as pragmatists) contend, therefore, is that philosophical inquiry should investigate how mind and body interact, how humans and their environments interrelate, and how embodied *praxis* transforms both the world and the self.

But, despite the analogies and similarities, how deep do the affinities between Clark's work and the different traditions of phenomenology actually run? In light of Clark's commitments to naturalism and technological optimism, how far down do the affinities go? Negatively, phenomenologists traditionally view naturalism as a form of scientific reductionism. Consequently, they have characterized it as an inadequate perspective for describing lived experience. Phenomenologists have also revealed the dangers of allowing the dominant cultural paradigm to be a technical one. Consequently, their genealogical and comparative inquiries into *techné* have been put to alternative conceptual and critical use.

As a caveat, we note that comprehensive evaluation of Clark's project would necessarily hinge on more than an assessment of his treatment of embodiment and its relation to phenomenology. Questions of how embodiment, technology, and *political economy* are inter-related, for example, are crucial: the latter—political economy—certainly conditions what emerges within the sphere of the technological and, therefore, within the sphere of our embodied inter-relations with the technological. Nevertheless, as embodiment is a key concept in Clark's vision of our species' development, it is a useful place to begin questioning whether Clark's *cyborg theory* is a sufficient account of our humanity. It is also a useful place to consider the inter- and intradisciplinary value of grasping the nature and scope of embodiment. After all, Clark is concerned with the reasons why a science of the mind should concern itself with embodied action or even conceive of brains as "controllers for embodied activity" in the first place (1998, xii).

In giving fundamental consideration to the question of how basic capacities for embodied action relate to our capacities for reflective reasoning and abstraction, Clark thus succeeds in creating a shared context within which phenomenologists, Anglo-American philosophers of mind, and scientists can engage each other.

In order to meet the range of goals listed, we begin with critical reconstruction, opening with an overview of Clark's *philosophical anthropology*—his claims about how best to understand the nature and scope of our fundamental humanity. This entails discussion of Clark's views on three dimensions of embodiment: *body image*, *bodily agency*, and *embodied identity*. We evaluate Clark's account by introducing considerations of philosophical rhetoric, modeling, and identity, and by emphasizing the conceptual relevance of phenomenological philosophy of technology along the way. In this regard, we consider some problems concerning how Clark tacitly frames the relation between metaphor and materiality. We argue that despite Clark's contributions, his discourse is, ultimately, deeply incomplete: it would benefit from further consideration of the primacy of embodiment and from more critical analysis of identity and agency as distributed and socially contextualized relations.

2. Philosophical Anthropology: Epistemic and Ontological Considerations

Clark's philosophical anthropology revives an appreciation for the (often contested) role philosophical anthropology has played in establishing the parameters of inquiry, whether in its initial Kantian form and/or in the various extensions and critiques that have followed after Kant—whether phenomenological, pragmatist, or within critical theory and poststructualism, for example. Clark's account, however, revolves around the following questions. How can human nature best be understood? How can humans "be *so very special* while at the same time being not so very different, biologically speaking, from the other animals with whom we share both the planet and most of our genes"? (10) How can the problem of human nature be posed today, a time in which cognition enhancement technologies have become increasingly affordable, customizable, user friendly, networked, portable, and functionally powerful? How should the question of human nature be posed at a time when such technologies actively and reciprocally participate in the co-construction of what counts as "cognitive function"?

Epistemically, Clark answers these questions by appealing to "naturalism." He attempts to characterize the present human configuration as an adaptive moment within a bio-cultural evolutionary continuum by: (1) discerning invariant human characteristics and invariant human behavioral patterns and (2) correlating these invariants to empirical scientific research. Proceeding this way, he claims, yields an immediate payoff. Unlike the "hard" problem of discerning how objective neuronal processes could plausibly cause subjective experience, philosophical anthropology putatively does not require further neurobiological evidence to explicate the "cognitive fossil trail" and unravel its mystery.

Despite Clark's confidence, it remains contested as to whether an identifiable human core exists that is stable and enduring. At present, many social constructivists (and other *anti-essentialist* theorists) would repudiate the terms in which the ambition to identify our nature has been framed, and they would, thereby, deny the existence of human nature. From their (usually) nominalist perspective, "human nature" should not be represented as an underlying ontological substratum or as needs that are fixed once and forever. Rather, it should be viewed as a malleable, socially negotiated concept that lacks a single invariant property or definition. As a matter of course, human nature simply designates diverse and sometimes incommensurable cultural constellations, the content and definition of which depend upon variations in context and their relation to underlying practices. In the words of Jose Ortega y Gasset: "Man, in a word, has no nature; what he has is history" (217).

Others claim that the very discourse of "human nature" first and foremost serves a coercive function. Following Friedrich Nietzsche and Michel Foucault, a range of theorists have suggested that the discourse of "human nature" should be seen in direct relation to forces of power. Pragmatists have suggested that the search for "human nature" is synonymous with the ambition to transcend and devalue the contingent practices that shape the beings we become. And this clearly overlaps with the early Frankfurt School rejection of philosophical anthropology: as origin stories, "human nature" narratives appear to be ideological inventions designed both to escape the forces of social mediation and to rationalize the political and ideological constellations that dominate an epoch.[1]

Although Clark does not address these historicist positions directly, his methodological orientation can be interpreted as suggesting a particular type of response. By grounding his philosophical anthropology in invariant evo-

lutionary patterns, Clark situates his analysis of human embodiment within the domain of a common phylogenetic heritage; and it is worth noting that some phenomenologists—most ardently Maxine Sheets-Johnson—have pursued a similar trajectory. Characterizing her position on embodiment as antithetical to the social constructivist perspective, Sheets-Johnson insists that study of archetypical forms of sensory-kinetic embodiment reveals that: (1) a pan-cultural human nature exists, and (2) there are correlative universal processes of corporeal apprenticeship and learning that all humans go through. From this perspective, to deny human nature is, ironically, to deny the very anthropological possibility of cognition and language developing into the diverse forms we encounter. This diversity is dependent upon a core biological matrix that can be expressed in multiple but not unlimited ways.[2] What Sheets-Johnson's analysis suggests, therefore, is that while it is naïve and sentimental to believe that natural forms are pure configurations untainted by culture, it is equally naïve to believe that the evolutionary past can be circumvented by revealing the historicity of contingent ideas of human nature. In effect, identifying ontological fundamentals is not incompatible with but rather a precondition for identifying the conditions of possibility by which diverse and underdetermined capacities and practices emerge—as emergence theorists have argued.

But, even if it is granted that human nature exists and can be identified with a universal designation, its content, meaning, and implications remain debatable. Some of the standard depictions suggest that humans are, at bottom, the following: *homo economicus*, *homo familiaris*, *homo ludens*, and *homo narrans,* to name a few. From Clark's perspective, however, these are inadequate characterizations. They all might capture aspects of our humanity, but none is sufficiently sensitive to embodiment; none uncovers the key to human flourishing.

Clark addresses our fundamental proclivities, for both temporal and spatial adaptations, for example, by providing a variation of the *homo faber* thesis. By referring to humans as "tool-making animals," Clark, reminiscent of both Benjamin Franklin and Henri Bergson, attempts to counterbalance the intellectualist associations regularly attached to *homo sapiens*. In the standard narrative, our primitive bipedal ancestors allegedly compensated for their physical disadvantages—being weaker and slower than many predators, being bereft of fangs, claws, and tails—by using a combination of hand and brain to develop tools and cooperative strategies. Clark revives the theme of our special capacity for inventiveness by insisting that

humanity is, *ontologically*, a "*cyborg*" species: "What makes us distinctly human is our capacity to rebuild our own mental circuitry, continually as an empowering web of culture, education, technology, and artifacts" (10). Humans, he claims, have always been "reasoning systems whose minds and selves are spread across biological brain and nonbiological circuitry" (10). In ways unlike any other species, the human brain's "complicated wiring" permits collaborative practices of technological extension and integrative processes of environmental incorporation. The issue, then, is not whether humans have processed information better than any other species; rather, human uniqueness lies in the fact that *cognitive hybridization* allows us to continually amplify our brain-power and become better and better "information processors." (Clark's effort to capture our inventive hybridization by enthusiastically applying such recent metaphors as "circuitry," "wiring," and "information processor," along with their cognitivist and techno-commercial associations, will occupy a later section of our discussion.)

Within this bio-cultural evolutionary context, human history appears to be a long chain of events in which new resources with the potential to enhance our problem-solving regimes are explored and tested. Tool-making and tool-use are deemed fundamental human activities, but this is so only because of our cognitive orientation towards the world. As "cognitive opportunists," Clark claims that our progenitors seized upon writing's capacity to provide "cognitive shortcuts" and, therein, to "upgrade" their cognitive profiles "beyond recognition:" "With speech, text, and the tradition of using them as critical tools under our belts, humankind entered into the first phase of its cyborg existence" (80, 81). What our linguistically enhanced ancestors came to realize, therefore, is that by externalizing information, writing provides an archive that is more durable and advantageous than a temporary and fragile repository of internal biological memory.

Even in its most basic manifestations, writing can serve several significant transcendental functions: (1) When it becomes possible to use inscription devices to produce symbolic marks that can depict thought in a stable graphic format, meaning can inhabit a material presence. (2) When it becomes possible to access the material presence of writing in order to "think and reason about our own thinking and reasoning," then we can (2a) engage in second-order cognitive activities, and, in the process, (2b) differentiate ourselves ontologically from the other animals whose "cognitive profiles" allow them to cope with natural signs, such as tracks, but does not permit meta-level reflection, such as thinking or reasoning about think-

ing and reasoning (79). (3) When it becomes possible to apply writing to temporally dynamic ends, such as recording "half-finished arguments" and "soliciting new evidence for and against emerging ideas," then communities of writers can transcend "mythic" expression by (3a) engaging in collective reasoning; this, in turn, permits (3b) "new stable objects for critical activity" to be created—such as new hypotheses, explanations, and arguments (79-81). (4) When it becomes possible to value collective reasoning for its ability to gather and archive information more efficiently than individual reasoning, as well as appreciate its potential to mitigate against personal bias by facilitating intersubjective agreement, then humans can view the "process of deliberately building better words to think in" as a mandate for how best to evolve culturally. We become capable of "systematically and repeatedly" pursuing developmental paths that aim to expand cognitive development; it is no longer necessary to concentrate on finding new and better ways to adapt to "bodily needs (with heating, clothing, and cooking)" (78, 80, 82).

From this perspective, bio-technological mergers appear less revolutionary than contemporary developers and theorists might proclaim. While these mergers might inaugurate unprecedented opportunities for cognition and action, their development and use is, ultimately, best characterized as another stage of post-writing "natural" development. To further elucidate and engage these points—especially the potentially reductive implications of the informational and cognitivist framework being employed—we revisit these themes in Sections 9 and 10.

3. Philosophical Anthropology: Normative and Popular Considerations

Since ontological descriptions and foundational conceptions of our humanity can give rise to considerations of normative consequence, Clark considers the social worlds that should be developed in order to capitalize on our cyborg abilities, and the kinds of criticisms of technological development that should be deflated in light of a proper understanding of our cyborg being. Anticipating the response of potential critics, Clark writes:

> Some fear, in all this, a loathsome "post-human" future. They predict a kind of technologically incubated mind-rot, leading to the loss of identity, loss of control, overload, dependence, invasion of privacy, isolation, and the ultimate rejection of the body…But if I am right—if

> it is our basic *human* nature to annex, exploit, and incorporate non-biological stuff deep into our mental profiles—then the question is not whether we go that route, but in what ways we actively sculpt and shape it. By seeing ourselves as we truly are, we increase the chances that our future biotechnological unions will be good ones (198).

While some of the cyborgian technologies being developed now might suggest a brave new world of concern, Clark assures us that we are simply following our natures, fulfilling our evolutionary destiny, and that our anxieties are fully mitigated by the benefits.

The popular press has, however, been sympathetic to Clark's philosophical anthropology. In a *Los Angeles Times* article provocatively titled "Rise of the Machines," the following praise is lavished upon Clark's characterization of our skillful ability to extend the human body and mind beyond the "skinbag":

> Imagine our children carrying—or just as likely, wearing—more computing power than sits on your desk today. Imagine them living with a constant background sense of being connected to family and friends; working and playing in smart mobs; pooling experiences and knowledge with trusted humans and virtual agents; and experiencing the Internet as a deep, abiding presence, sometimes on the edge of their awareness, sometimes in the center, but always there. After a time, their abilities to organize and act collectively will recede into the backgrounds of their consciousness. At this point, smart mobs become another of Clark's technologies—another tool that quietly extends the abilities of humans, shaping our thought but rarely thought about. Talk of cyborgs, hive minds, and collective consciousness may sound fantastic (or at least very Californian). But the ability to use technologies to collectively extend our bodies and minds is what distinguished *Homo sapiens* from our Neanderthal competitors, encouraged the development of speech, allowed us to hunt big game and practice agriculture, drove us to build cities and invent writing. It isn't science fiction. It's civilization.

This final sentence clearly captures the ease by which Clark's cyborg discourse slides between epistemic, ontological, and normative registers: it appears capable of explaining how our ancestors developed into civilized beings; it also appears capable of justifying why certain civilizing abilities and dispositions

need to be maintained in order for us to avoid regressing to a less humane state of existence. Rhetorically, therefore, it sets a practical tone that bolsters his account against certain forms of refutation: one would appear impractical, if not downright obstructionist, to question the value of advancing civilization further. (The reader might already be anticipating some of our critical concerns. These will be made more explicit beginning in Section 7.)

4. Embodiment: Body Image, Agency, and Identity

As we have already suggested, embodiment is the conceptual glue that holds Clark's *essentialist* philosophical anthropology together. What requires clarification is its *anti-essentialist* features—namely, that being a cyborg is to engage in *praxis* in and through a highly adaptive and malleable body. A discussion of body image, agency, and identity is, therefore, in order.

The first of these topics, body image, can be defined as "a complex set of intentional states—perceptions, mental representations, beliefs, and attitudes—in which the intentional object of such states is one's body" (Gallagher and Cole, 132). As "a reflexive intentional system" the body image "ordinarily represents the body" as a "personal body." The body image, therefore, is the body that belongs to *me*; unlike "body schema," it is not experienced as a system of general biological processes (Gallagher and Cole, 133-134).

Clark develops his account of body image in consultation with a variety of sources: phenomenological analysis, empirical experiments that demonstrate Ramachandran's Principle, and Daniel Dennett's thought experiment in "Where Am I?". His main thesis can be stated as follows. Since the brain has the capacity to construct and transform different models of integrated bodily states, our embodied experiences of location and boundary can be experienced and negotiated with significant flexibility. While a complex scientific account would be required to explain what processes permit this capacity to alter neural matrices, Clark's philosophical ambitions are served by examining these matrices in relation to input shifts that are coordinated with reciprocated bodily actions. Experiments in this regard successfully suggest that first-person experiences of embodiment: (1) can be flexible, (2) can extend to non-biological components, and (3) can differ substantively from third-person perceptions of bodily presence.

On the related matters of bodily agency and identity, Clark is anti-essentialist as well. The most vivid practices that he analyzes revolve around

Stelarc, an Australian performance artist who uses technological supplements to experiment with the body's "posthuman" capacity to extend its awareness of the world and, thereby, to extend its ability to act in the world through the reorganization that technological diversification and incorporation permit. In a piece called *Third Hand*, Stelarc dons a mechanical third hand that is equipped with a tactile feedback system and is controlled by EMG signals that are detected by electrodes placed on the leg and abdomen. Having trained himself to use this device intuitively—such that its effortless activities can be deployed independently of and coordinated with his other two fully-functional biological hands—Stelarc's cyborg performance includes complex activities, such as writing. "Today technology is no longer exploding out from the body, in an external fashion," Stelarc claims, "but is imploding and sticking to the skin. It is imploding and entering into the interior of the body" (Caygill, 46). Although Clark intends for this example to resonate with his analysis of Heidegger's examination of the "ready-to-hand" use of tools, critics might object that the example is too extreme, that Stelarc's hyper-technologized aesthetics are too removed from everyday, lifeworld coping to be relevantly informative. This concern can be remedied, however, by turning to a paradigm case in the phenomenological literature.

Like Merleau-Ponty's and Michael Polanyi, Clark discusses how a blind man's use of a walking stick can extend his experience of bodily presence (38). To be sure, a blind person cannot perceive colors simply by using a walking stick; no amount of tapping will reveal the grayness of the street. Nevertheless, the walking stick alters the blind man's direct and immediate perceptual relation to the world, and such a shift in perception affords new opportunities for agency and therein new opportunities to performatively alter identity.[3]

When Ihde characterizes this shift in perception as a shift in "embodiment relations," he captures the critical point of this "human-technology-world" example succinctly. When prosthetic technologies such as walking sticks are used to expand perceptual capacities, they are not experienced mechanically or as external objects. Instead, the stick-in-use is best understood as what Clark calls a "transparent" technology. The blind man feels neither its objective position in space nor its pressure in his hand; what he experiences is a direct embodied access to the world that does not differ from the direct connection that his other "sense organs" provide. In terms of identity, the blind man with a walking stick differs from a blind man who lacks access to a perceptual prosthetic; the former problem-solving system

may very well find it easier than the latter technology-bereft organism to construct a narrative in which the acting "self" is an "independent" person.[4] Such a conception of identity, that is, identity as a moveable point where the various stories told by an individual are inseparable from the tools and technologies by which the self engages the world, clearly resembles (as Clark acknowledges) Dennett's view of the self as a necessary invention—an invention that is akin to the theoretical fiction of the center of gravity of any physical object.

5. Embodiment: Vehicle Externalism and Epistemic Considerations

Put in terms more familiar in the Anglo-American philosophical literature, Clark's anti-essentialist view of bodily agency and identity qualifies as a version of "vehicle externalism"—"the view that the vehicles of content need not be restricted to the inner biological realm." "In fact," Clark insists, "the view in NBC [*Natural Born Cyborgs*] is broader even than this, since not just cognitive contents, but cognitive operations (such as the comparing and transforming of representations) can…be supported by both biological and non-biological structures and processes (vehicles)" (2004, 171). Thus, from Clark's perspective, if someone asks if you know the time and you respond in the affirmative, only to then subsequently check your watch, or if someone asks the meaning of a word and you respond in the affirmative, only to then subsequently check a dictionary, then you are responding in an epistemically sound way. For Clark, it is epistemically irrelevant whether computation occurs through biological or technological means (assuming, of course, that the metaphor of "computation" is itself a sufficiently sound analogical link between our cognition and the non-biological, non-conscious processes that are available to biological and conscious users.). The analysis provided by Steven Johnson—author of the widely acclaimed *Mind Wide Open: Your Brain and the Neuroscience of Everyday Life*—of his relationship to new computer programs exemplifies Clark's argument: To be human is to share a hybrid identity with the technologies that permit our cognitive experience of the world to take on distinctly cyborgian contours; accordingly, our criteria of epistemic appraisal should reflect these contours. Johnson, for example, recounts how his firsthand experience with software programs that combine archival storage with text searching features changed his writing process and prompted him to entertain cyborgian thoughts on how authorship should be defined and attributed.[5]

Consideration of Johnson's testimony concerning his intimate cognitive relations with computational software appears to validate one of Clark's provocative personal observations. Clark opens *Natural Born Cyborgs* by noting that his experience of recently losing a laptop felt like "a sudden and vicious type of...brain damage," the "cyborg equivalent of a mild stroke" (4, 10). For Clark the flexible and incorporative dimensions of cyborg embodiment permit humans to experience biological and technological disruptions to cognition and perception similarly (if not identically).[6]

6. Embodiment: Deflating Autonomous Subjectivity

Clark ultimately presents these discussions of body image, bodily agency, and embodied identity as premises in a larger argument that is intended to serve two purposes. Negatively, Clark intends to deflate the "autonomous" view of subjectivity. Positively, Clark intends to provide a "relational" view of decision-making in which the concrete conditions that circumscribe the degrees of freedom available to a subject are given as much emphasis as is the human capacity for deliberation. In its general formulation such a position is, of course, a familiar theme in philosophy after the so-called "naturalist," "linguistic," and "sociological" turns. Diverse discourses—actor-network-theory, pragmatism, deconstruction, post-Darwinian accounts of evolutionary dynamics, post-Kantian versions of social constructivism, psychoanalysis, Foucault-inspired inquires into knowledge/power, the Deleuzian "body without organs"—have announced the end of human exceptionalism. These positions all posit that far from being unique, independent, self-directed, or self-present, human identity is to a great extent an emergent result of complex ecological relations, interactions, and mediated forms of engagement. This form of critique is as much directed against the Kantian notion of subjectivity as it is the classical existentialist view of freedom and personal choice.[7]

But for all the well-trodden territory that it covers, Clark's particular take on subjectivity is guided by a provocative vision of the relation between technology and biology. His central contention is that the delegation of much of our biological and even cognitive life to pre-personal "zombie" processes is conceptually compatible with the idea of delegating much of one's biological and even cognitive life to tacitly functioning technological operations. In neither case does the subject have the benefit of a "central planner" who receives and decodes information while orchestrating all forms of behavior.

In both cases the subject can cope effectively in the world precisely because he or she possesses multiple, special-purposed "problem-solvers" that are orchestrated by simple environmental inputs and relatively simple forms of internal signaling.

Put more concretely, the human organism can function in complex environments because many of its life-sustaining biological processes are involuntary and self-regulating. It would take an extraordinary experience to prompt one into thinking that a better result would arise if the blood stream, nervous system, inner organ functions, or heart beat were governed by willpower. Perceptually, humans use "cognitive shortcuts" to compensate for the temporal gaps that occur between the sensory reception of stimuli and their being decoded into meaningful (interpretable and reflexively available) information. Even the repetitive aspects of our daily behavior, Clark contends, involve the use of cognitive shortcuts: one does not get a drink from the refrigerator by consciously coordinating beliefs, desires, and bodily motion; instead, one simply launches a tacit "acquire the bottle" routine.

In sum, as one reviewer aptly puts it, Clark's goal is to demonstrate that the human being is: "a contingent patchwork of systems of perception and movement, held together by borrowing support from relatively stable non-living assemblages" (Mackenzie, 153). "Think of it," the review continues:

> plans, actions, our sense of time, memory, our awareness of self and other, perhaps any idea of a world as such would slide into a drifting mist, a semi-waking state, life by fits and starts, if not for the scaffolding of relatively more durable yet plastic internal and external orderings and supports on which cognition constantly unfolds and props itself up. The orderings can materialize in practices of speaking and listening as well as in artifacts such as tools or built environments (Mackenzie, 153-154).

Since technological artifacts are often more durable and reliable than their biological equivalents, it is not surprising that Clark can ask us to be completely comfortable with the idea that in the future children habituated into the practice of consulting "data bots" to cultivate their aesthetic preferences will grow into adults who continue to do the same. For Clark, there simply is no ontological offence or epistemological mistake involved if we suddenly feel inspired to want to listen to more jazz or if a customized "data bot" (in a computationally "knowing" and timely way) provides the same recommendation. Moreover, with the right technology in place, seemingly

random experiences of inspiration could become normalized due to the benefits of "swarm" intelligence.

7. Cyborg as Metaphor: Salvational History Returns

To begin assessing Clark's philosophical anthropology, we need to ask whether "cyborg" is a good metaphor with which to describe our fundamental humanity. Instead of examining the history of cyborg imagery critically, Clark "hijacks" the term, writing as if were possible, and indeed desirable, to wipe the slate clean and construct a cyborg philosophy from scratch:

> The cyborg is a potent cultural icon of the late twentieth century. It conjures images of human-machine hybrids and the physical merging of flesh and electronic circuitry. My goal is to hijack that image and to reshape it, revealing its disguised vision of (oddly) our own biological nature (5).

On the one hand, Clark cannot be faulted simply for using metaphorical language. Since background metaphors permit empirical observations to crystallize into larger and inter-related *Gestalt* patterns, metaphors pervade all domains of science, including Clark's area of concern–human evolution. On the other hand, Clark's conceptual "hijacking" stylizes his relation to the history of philosophy as decidedly Cartesian and very much in accord with a trend that dominates much of contemporary Anglo-American philosophy. It is common-place to find the history of ideas being treated there either as irrelevant to contemporary concerns or as valuable only as an "intuition pump." A contrary perspective, one that focuses upon the conceptual deficiencies that can accompany the bracketing of history, is articulated by Peter Galison. In his essay, "The Ontology of the Enemy: Norbert Wiener and the Cybernetic Vision," Galison contends that, "in general, the cultural meaning of concepts or practices…is indissolubly tied to their genealogy." (264). This claim about conceptual "indissolubility" is a claim about the value of hermeneutic sensitivity: Practices of historical use condition the intelligibility of concepts and models; sometimes persistent traces of historically sedimented associations over-determine the meaning that these concepts and models can convey. Embedded in this way of looking at language are concerns about the constraints—historical, semantic, and normative—that delimit how a cyborg theorist ought to conduct inquiry.[8]

Before Galison provided his hermeneutic heuristic, phenomenologists had already warned us that "cyborg" is a questionable metaphor around which to weave a philosophical anthropology. Sensing that the (anticipated) practical applications associated with electronic devices–devices that permit "more or less" direct communication between the human brain and computational technologies–might foster widespread acceptance of the cyborg as a "symbol guiding men's actions and forming their ideals," Edward Ballard considered the potential epistemic and ontological "violence" that might result. Should "humanistic" and "technological" cultures fail to relate dialectically—should "technism" become an all-encompassing paradigm for understanding the natural world as well as the core truths about human subjectivity, Ballard wrote:

> Technism by definition considers man to be in every respect a proper part of nature and a use value…The world-symbols of technism direct men…to regard themselves as workers for technology, at best as brain-workers or problem solvers. A popular expression of the man of technism is the Cyborg, the man-machine; the man who looks wholly to the machine for his salvation will see his final form as the immediate union of man and machine in one person, as the Medieval man saw his ideal and complete form in the unity of the divine and the human. And he envisions others as co-servants of technism and nature as fuel; all equally place their future in the hands of the prosthetic savior. Now this understanding of man, while efficient within its limits, is clearly a partial understanding: accepting it as the whole and sufficient view does man violence (152, 232).

In this passage, Ballard suggests that although the image of the cyborg appears justifiable on purely naturalist grounds, it retains an indissoluble spiritual dimension, indeed a metaphysical ambition. While being committed to the constraints of the "natural order," Clark appears, methodologically, to treat accounts of humanity that appeal to the "soul," "spirit," or "primitive bioinsulation" as implausible from the start (26). And yet, contrary to this intent, he appears to foster a desire to achieve transcendence by achieving primal unity with otherness, one of humanity's most enduring spiritual proclivities. In the case of the cyborg, the traditional archetypical fusion of human and divine becomes transposed and transformed semiotically: As the Italian Futurists rhetorically emphasized, for the cyborg enthusiast, utopia

does not require the notion of a transcendent godhead to become conceivable; all it requires is the fusion of the human (as creator) and the machine (as created). In other words, far from being an innocently explanatory or ontologically descriptive metaphor, the concept "cyborg" is embedded in eschatological aspirations: Unlike the Christian narrative of the Second Coming, salvation is depicted here less as an event than as biologically unconstrained processes and functions that are granted by the "prosthetic" savior. The salvation at issue is the elimination of otherness by virtue of the *totalizing presence* that cyborg cognition and cyborg action will ultimately yield. As *homo faber*, the cyborg will re-make the world in its own image until all of nature becomes an extension of its mind, until the quest for monism is completed and everything is transformed into a cognitive tool.

What Ballard's observation suggests, therefore, is that Heidegger's concerns about the essence of technology—namely, that it reduces nature to "standing reserve"—can be understood as a critique of philosophical anthropologies that are embedded within the ontological parameters of modernity. In other words, despite the postmodern flexibility that Clark associates with cyborg agency and identity, his account of cyborg monism remains guided by the distinctly modern goal of connecting historical progress with the conquest of nature: in not identifying any normative reasons for the cyborg to limit its appropriations of nature, Clark suggests, implicitly, that nonhumans are of only instrumental value to humans; in not identifying any purposive qualities to nature, Clark suggests, implicitly, that nature is ontologically void until transformed by cyborg incorporation; and, in describing cyborg *praxis* in terms of cognitive opportunism, Clark suggests, implicitly, that human consciousness (and the economic systems through which its desires are realized) is the unproblematic source of all values. Taken collectively, these anthropomorphic suggestions imply a notion of "destiny"—humans can achieve their species-being as cyborgs by rendering nature empirically and ontologically redundant.

Once this notion of redundancy is grasped, then it seems that Clark's account does something unexpected. *It sanctions the exorcism of embodiment*. As one critic notes:

> If the brain really is a toolkit of devices, we will probably replace them with more reliable ones, and plenty of backups. These need not be stored in a single, central location. Some might go forth with the avatars, for ease of communication, whilst others remain behind. Some might

> belong to a single, shared resource, so that our minds mingle together (think of the World Wide Web). We can imagine these things. Clark says that our sense of ourselves is a construct. I do not see why our sense of ourselves, or the location of our cognitive states, has to be tied to our bodies. Or that we will need bodies in any strong sense, since our components can be distributed over many locations (Dartnall, 148).

This point is reiterated by another reviewer who writes:

> As natural born cyborgs…isn't one of our primary drives, in addition to streamlining and accentuating our lives, also to extend them through the manipulation of non-biological resources?...This being the case I can see no reason why it wouldn't be considered possible for the biological to eventually be usurped by the non-biological (Shipley, 328).

By detaching and disassociating what has historically been a necessary connection between human embodiment and the human sense of place, Clark's account blithely evades any engagement with the finitude that is at the core of our techno-salvific desires in the first place; accordingly, his account diminishes an essential existential dimension of our current form of humanity. If we are permitted to presuppose the value of the embodied rather than the technological transcendence of the embodied, Clark's conceptual "hijacking" fails. The coherence of his account is predicated upon the trope of a privileged consciousness that will someday achieve omnipresence by shedding the incomplete, vulnerable, and unreliable trappings of bodily fragility and specificity; in this scenario, effective technological distribution might not only eliminate organic illness and decay, but also the need to eat, drink, defecate, menstruate, and copulate. Our point is not to do any back-door essentializing or romanticizing about embodiement but, rather, to ensure that we not essentialize an already disembodied conception of consciousness, one that in turn provides back-door legitimation for a specific constellation of technological and economic desire that is itself kept out of critical view.

For example, one possible and specific implication of Clark's view is illustrated in Howard Rheingold's "Clothes Make the Network." He suggests that by habitually availing ourselves of the technical benefits of information exchanging devices, the fundamental criteria for achieving social success will change from beneficial human-to-human interactions to beneficial machine-

to-machine interactions: "one day the most important factor in social success won't be who you know, but who your wearable knows."[9]

Were Rheingold to be describing an isolated event, there might be nothing wrong with using technology to bypass direct conversation for the sake of impersonally sharing information. But the narrative he provides, in which people are characterized as "wastes of social capital," should give us the same pause for thought that Ballard provided when he reflected on the limitations inherent in characterizing humans as "brain workers." Once the diversity of human motivations is reduced to cognitive opportunism, then not only does it become difficult to understand any human activity in non-instrumental terms—including play or poetically disclosing worlds—but it also becomes a challenge to understand other people in non-instrumental terms, that is, as beings who are irreducible to well-spent or wasted social capital.

Ultimately, then, the cyborg account of the future does not fit the genre that Clark assigns it—the techno thriller. Instead, on the shirt-tails of indeed important philosophical inquiries, it promotes a rather questionable techno-fantasy. Whereas most historians of technology have come to recognize that many of the best technological predictions often fail to occur precisely because technological development tends to go through unexpected twists and turns, Clark short-circuits any concerns about which twists and turns might prevail and whether they should prevail. Although he does not say so explicitly, Clark's account suggests that no matter what technologies are developed, and no matter what unexpected consequences arise through their use, the cyborg human will retain its *insatiable drive* to address its cognitive needs through inventive technological solutions—solutions that should permit the cyborg's self-confirmation to go unchecked and its incorporative tool-based acquisitiveness to absorb and reshape all remnants of alterity. In Clark's own words: "We have been designed, by Mother Nature, to exploit deep neural plasticity in order to become one with our best and most reliable tools. Minds like ours were made for mergers. Tools-R-US, and have always been" (6-7)…"We, meaning we human individuals, just *are* these shifting coalitions of tools" (136-137).

To play our hand even more explicitly, we have the following cumulative and related concerns: 1) As an argument, the "basic human nature" to which Clark refers is often too vague, underdetermining, and potentially question-begging to serve as justification for or to alleviate anxiety regarding untoward consequences—those biotechnological unions that *won't* be "good

ones." In effect, his historicist logic tends to be uni-directional and one-sidedly progressive. 2) The contexts in which choices are made and socially empowered agency is most decidedly at play cannot be reduced to "coalitions of tools" and their/our "mental profiles"—concepts that are ill-equipped to capture the collective economic and political forces that circumscribe and incorporate our "mental profiles" and that selectively produce and utilize some rather than other tools. In effect, his ontology tends to be too reductive and sociologically thin to support its normative enthusiasms. 3) Given the many good *and* horrific things we have already done as a species, the encouragement to see "ourselves as we truly are" —as cyborgs—will not by itself provide the normative guidance or force being suggested, especially in the economic contexts—of production and marketing—in which the "opportunism" being encouraged is made most decisively operational. In effect, his appeal to our true "human nature" has a rhetorical quality that serves to legitimize in advance a range of "unions" whose potentially transformational consequences, for good or ill, cannot be predicted in advance. If the vicissitudes and causal indeterminacy of history is as legitimate (and cautionary) a guide as our "true nature," thinly qualified optimism will be neither logically nor normatively compelling as a response. Thinking of ourselves, therefore, as a "coalition of tools" is to promote an instrumentalist model of identity that requires much more consideration. Thus, we continue by considering the relation of modeling to philosophical anthropology, and then we turn our attention to the topic of instrumentalism itself.

8. Cyborgs and Modeling

Although we just highlighted some areas of concern, the conclusion to this section focuses upon a positive contribution that Clark's philosophical anthropology can make to our understanding of embodiment and identity. Specifically, Clark's account of the intimacy that humans develop with the technologies that are incorporated as extensions of their very being provides the basis for answering a question of long-standing interest to phenomenologists—namely, why do humans perpetually model conceptions of mind on the inner workings of machines?

As Manuel De Landa notes:

> When clockworks once represented the dominant technology of the planet, people imagined the world around them as similar systems of

> cogs and wheels. The solar system, for instance, was pictured right up until the nineteenth century as just such a clockwork mechanism, that is, as a motorless system animated by God from the outside. Later, when motors came along, people began to realize that many natural systems behave more like motors: they run on an external reservoir of resources and exploit the labor performed by circulating flows of matter and energy (3).

Similarly, Galison claims:

> As [Norbert] Wiener argued, each age engendered its own simulacrum of humanity—clockmakers of the eighteenth century made their pirouetting mechanical figures, steam engineers of the nineteenth glorified their engines as versions of the body. Our age? We make computers to calculate differential equations, open doors with photocells, and, not surprisingly, "the present automaton…points guns to the place at which a radar beam pick up an airplane"…In a sweeping totalization Wiener had, within two years of the end of the war, elevated his AA predictor to a new symbol for man (253).

Ihde refers to this phenomenon as an "epistemology engine": "The idea is that some particular technology in its workings and use is seen suggestively as a metaphor for the human subject and often for the production of knowledge itself" (Ihde and Selinger, 361). He suggests that epistemology engines are not only generated because we understand the workings of technological devices better than many mental processes, but, more primarily, because humans live in a technologically saturated culture and, as such, technologies function as the background horizon upon which we "projectively" understand the world and interpret ourselves.

Phenomenologists have been concerned about the damage that epistemology engines can do to our understanding of lifeworld experience. In this context, Merleau-Ponty evokes the political term "ideology" in order pejoratively to characterize the attempt to model the human mind on advances in cybernetics:

> Thinking "operationally" has become a sort of absolute artificialism, such as we see in the ideology of cybernetics, where human creations are derived from a natural information process, itself conceived on the model

> of human machines. If this kind of thinking were to extend its reign to man and history; if, pretending to ignore what we know of them through our own situations, it were to set out to construct man and history on the basis of a few abstract indices. . . we enter into a cultural regimen where there is neither truth nor falsity concerning man and history, into a sleep, or a nightmare, from which there is no awakening (1964,160).

Similarly, in the context of critiquing the operational thinking underlying so-called expert computer systems, Hubert and Stuart Dreyfus lament the possibility that humans may soon become slaves to computers. They write, ominously:

> The chips are down, the choice is being made right now. And at all levels of society computer-type rationality is winning out. Experts are becoming an endangered species. If we fail to put logic machines in their proper place, as aids to human beings with expert intuition, then we shall end up servants supplying data to our competent machines. Should calculative rationality triumph, no one will notice that something is missing, but now, while we still know what expert judgment is, let us use that expert judgment to preserve it. (195)

What these comments on the pervasiveness and dangers of modeling human capacities and identity on machines suggest is that we still require a response to the questions: Why do we become invested in or appropriated by some rather than other epistemological engines? On the basis of what criteria ought we to judge them, and in relation to which ontological, epistemological, and normative concerns? To this end, it is useful to revisit the theme addressed earlier when Clark's account of cyborg incorporation was presented as a solution to the psychological conundrum of identity-technology inter-dependence.

For Clark, technologies are not external objects; they are internalizeable tools that cyborgs can incorporate into their very being. In this sense, since human identity and agency is distributed amongst technological systems in the first place, it should come as no surprise that humans not only create analogies between technological and biological process, but that in the process they get so carried with the analogies that their very analogical status is forgotten. In other words, since human cyborgs are so accustomed to being technological symbionts, the process of looking to technological codes for

epistemological and ontological purposes need not feel like looking towards a foreign entity for help; instead, it can have the reassuring familiarity of examining part of one's being.

At the very least, however, we need to remember and critically evaluate the contexts of interest and purpose out of which our technologies emerge; and we should remember that as models of our being, therefore, they don't come to us as neutrally descriptive but as already loaded forces of interpretation and representation. The very notion of "model" suggests a kind of abstractness; it suggests an always self-conscious sense of the model's metaphoricity and our control over its discursive functions; it suggests an immunity, therefore, to the model's potentially destructive and materially concrete implications. We hope it is clear from the above, however, that the cyborg model is not abstract (but very concrete in its relating specific economic and material practices to ontological inquiry); that the application of its metaphors and analogies takes on very literal and acquisitive implications; and that we are not immune to but, rather, easily appropriated by the well-established force—technological and economic—already possessed by such models and metaphors.

9. Embodied Agency: The Instrumentalist Fallacy

Having just critically reviewed Clark's appeal to the concept "cyborg" in the context of presenting a philosophical anthropology, we are now in a position to review a phenomenological objection to his conception of cyborg agency. By considering how standard conceptions of autonomy and agency can be compromised by less powerful technologies than cyborgian ones that are attached to the brain or nervous system, we can clarify Clark's adoption of an *instrumentalist* conception of technology: the view that technology is a value-neutral tool, one that does not influence our fundamental ways of interpreting ourselves, others, and nature; the view that technology leaves intact our current beliefs and desires, and sense of what we might yet become. What is at stake, therefore, is the matter of Clark neutering his examples of technological use, of creating a contradiction by embracing a relational view of identity and agency, but an all too volitional view of desire and responsibility.

Remember, Clark asserts that when using a cane, a blind man may experience a shift in identity. Yet, in Clark's analysis, this transformation best expressed a shift in agency, not desire: with or without a cane, Clark

seems to suggest, the blind man has the same guiding desire, namely, the intention to get from point "A" to point "B." The same presumption of a stabilized desire presumably holds for the person who becomes one with his or her car. Likewise, Clark would have us believe that Sterlarc's technologies merely fulfill his pre-existing desire to be an artist. By extension, it would seem that with or without advanced computer software, Johnson would be determined to be an author. What we will show, however, is why the instrumentalist's perspective does not correspond to lived experience by considering a commonplace and more dramatic example, the matter of gun ownership.

According to Ihde, the NRA slogan, "Guns don't kill people, people kill people," can be refuted by demonstrating that it is predicated upon the fallacy of the instrumental view of technology. "The human-gun relation," Ihde notes, "transforms the situation from any similar situation of a human without a gun."(1990, 27; 2002, 93). By showing that the fundamental "relational unit" of "human-gun" is inclined to comport to the world in a markedly different way than the "non-relational unit" of "humans without guns," Ihde demonstrates that the NRA slogan presents only a partial account of technology; it suggests that firearm responsibility is ultimately a matter of subjective volition. It would be a mistake, however, to suggest that the technology of the pistol is not a relevant consideration for making a normative judgment concerning accountability. This is precisely the case because one's sense of self and sense of agency can change easily when in possession of a gun. Although the laws of physics permit guns, like all technologies, to be used in different ways to accomplish different purposes, the fact remains that guns, like all technologies, embody preferences and values in their very materiality. Their "technical code" is not indifferent to the range of ends that they can be utilized to achieve. Guns, as every historian knows, were designed for one central purpose—to accomplish radical and life-altering action at a distance. Indeed, apart from the context of a purely abstract thought experiment, it is difficult to imagine how the utility of a gun could be appraised without referring to the mechanisms that facilitate the movement of projectiles towards targets or to our historical success as beings whose cultural evolution has depended significantly on our projectile throwing endeavors. Just as external reality tends to appear as a list to be compiled to someone with a pencil, as images to be captured by someone with a camera, or as data to be inputted to someone with a computer, so too do things tend to appear as potential targets to the human holding a gun (Postman, 14).

What the NRA enthusiast overlooks, therefore, is the fact that technologies are not value-free instruments that we autonomously control, as if once in hand we easily transcend their impact upon our sensibilities and decide how they should be used via pure mental and independent abstraction. Technologies are best understood, Ihde suggests, not as isolated things-in-themselves, but as always contextualized within a holistic equipmental context of human concerns and practical conventions. In a "relativistic context" (in Ihde's sense), the matrix of technological materiality and our embodiment can enter into only a limited number of practices, some of which are guided by preferences inherent in the artifact's design, some of which are guided by social expectations concerning its use, but all of which select, amplify, and reduce aspects of our experience as our perceptions of the world and our modes of relating to it change accordingly. Bruno Latour pushes the matters even further with his rhetoric of "symmetry" when he claims: "You are different with a gun in your hand; the gun is different with you holding it. You are another subject because you hold the gun; the gun is another object because it has entered into a relationship with you" (Latour, 178-179).

This transition from canes to guns should illustrate not only that agency is technologically mediated and that this mediation can compromise autonomous decision-making; it also shows that Clark risks misunderstanding both why technologies are never neutral objects and why subjects are not, in the desired sense, autonomous in the first place. Indeed, while Clark's cyborg future appears to be one in which we'll have more reason to be concerned about computer networks then canes (or perhaps even guns?), our ability as theorists or activists to locate what deserves concern depends upon being aware, from the start, that artifacts and tools serve interests, that they have politics all the way down: "many of the most important examples of technologies that have political consequences are those that transcend the simple categories 'intended' and 'unintended' altogether" (Winner, 25). Considering Clark's anti-essentialism—we interconnect with our technologies so as to form an extended, problem-solving system, and that the system is the real self—it is surprising that his proposals of cyborgian identity (as generalized into a philosophical anthropology) does not engage with these concerns in a sustained way. A concluding discussion of three of his examples concerning the use of *imaging technologies* should concretize our concerns further.

10. Embodied Agency: Imaging Technologies

The first example illustrates Clark's conviction that in the future imaging technologies will enable to us organize information more effectively, unobtrusively, and creatively than our current technologies (and non-technologically mediated means) permit. Clark asks us to imagine the cognitive benefits that would be experienced were students in the future to be equipped with customized search-initiating probes that communicate with pattern recognizing devices and informational databases, such as "eyeglass-mounted cameras linked to face-recognition software and/or signals continuously broadcast by local devices" (47). Unlike the students of today who have to work hard to create and maintain organized lecture notes and need to exert deliberate effort to remember relevant details about classmates, students of tomorrow will be less cognitively taxed: once the pattern recognizing devices focus on the content of the notes being written down (or typed in), the student will be given visual cues that suggest how to organize the notes optimally based upon similarities between current and past lectures; and once the pattern recognizing devices focus on the faces of the nearby classmates, the student will be given visual cues that contain not only names of classmates, but also overlapping areas of interest that the students share (47).

The second example illustrates Clark's conviction that in the future imaging technologies will allow us to transcend logistical difficulties more efficiently than current technologies (and not technologically mediated means) permit. Unlike the logistically challenged citizen of today, who can rely on personal assistance, maps, compasses, or basic global positioning technologies (GPS) when lost or entering into new territory, citizens of the future may be equipped with advanced GPS technologies that can communicate with digital archives and transmit their information through an interactive visual and tactical display.[10]

The third example illustrates Clark's conviction that in the future imaging technologies will allow us to cultivate and maintain interests more efficiently than current technologies (and not technologically mediated means) permit. He invites us to imagine a future in which children—who presumably are raised in environments of "mixed reality play" since birth—become competent web users by the time they are four years old (53). In such a society:

> Dedicated software agents track and adapt to your emerging interests and random explorations. They then direct your attention to new ideas, web

> pages, and products. Over the next seventy-something years you and your software agent are locked in a complex dance of co-evolutionary change and learning, each influencing and being influenced by, the other (31).

Unlike the aesthetes and researchers of today, who need to go to great lengths to keep track of recommendations that are given to them by word of mouth or in written form, aesthetes and researchers of tomorrow will be able to rely upon data mining technologies that are connected to vast databases and function according to personalized heuristics.

Whatever cognitive allure these examples may have, they all remain embedded in the instrumentalist paradigm. Contrary to what Clark suggests, in all three instances changes in imaging practices can be expected to correlate with changes in subjectivity and agency; in turn, these changes in subjectivity and agency will likely correlate with changes in how normative judgments concerning responsibility are made. For example, in light of the stark differences between how contemporary and future students will manage information, Clark suggests the two groups will come to be differentiated ontologically. The student of today is treated, generally, as an autonomous subject—decisions concerning note taking and collaborative engagement are taken to fall predominately within the domain of an individual student's choice; accordingly, parents blame children for developing poor study habits when they do the former tasks poorly. By contrast, the student of the future is "at once a mobile locus of highly personalized resources and a useful interface for local, embedded computational devices. She is also a kind of automatic electronic trail-leaver" (47). In light of this cyborgian configuration, we can imagine that future parents will not be as intent on demanding personal accountability; problems in student performance will more likely be judged as technological problems—ones that can be solved by upgrading the student's pedagogical devices. And the problems to be solved in the first place will likely be chosen as a result of how well they lend themselves to the epistemological and representational preferences of computationally-dependent imaging.

Likewise, in the future when people arrive late for an engagement, there will be a new device to blame this state of affairs on: in addition to broken down cars, traffic jams, and late trains, people will routinely be able to blame their tardiness on malfunctioning GPS systems. Similarly, when citizens of the future have their "emerging psychological profile" actively and continually shaped by data mining technologies, then the locus of

psychological pathology will be given a new source. Whereas contemporary psychological problems are correlated to three dominant sources—behavior, environment, and biology—it looks as if someday we will be able to add a new culprit—data miners. A future Clarence Darrow might be able to mitigate the sentence of a guilty client by arguing that his or her pathological profile is the result of her dispositions being shaped by faulty or maliciously used data miners, the conditions of which the agent was unaware at the time of influence. After all, Your Honor, "You come to expect and trust the input from the agents as much as you expect and trust the input from your unconsciousness brain…You finally count as 'using' the software agents only in the same attenuated and ultimately paradoxical way, for example, that you count as 'using' your posterior parietal cortex" (Clark 31).

What these examples illustrate is that when agency no longer ends "at the skinbag," then neither do attributions of responsibility and irresponsibility. Moreover, our ontological and normative orientations are already embedded in our relations with devices, as a result of the properties of these devices themselves, and in relation to the economic contexts in which devices are designed and find their initial purposes.

11. Conclusion

Reflecting on the legacy of the cyborg figure, Donna Haraway recently noted: "Cyborgs and companion species each bring together the human and the non-human, the organic and the technological, carbon and silicon, freedom and structure, history and myth,…modernity and post-modernity, nature and culture in unexpected ways" (2003, 60). Clark's views on humans-as-cyborg beings ultimately traverses analogous domains. His naturalism and technological enthusiasm emerge out of a philosophical anthropology that: (1) declines to accord embodiment a central role in future human-technology relations; and (2) that circumvents the centrality of the lived experience of embodying technologies–a centrality that much of the phenomenological tradition has successfully demonstrated. As to the former, the teleological considerations of incorporation were shown to privilege *embrainment* more than embodiment. As to the latter, Clark's instrumentalist view of technology led him to distort what it is like for a subject to experience changes in agency, identity, and normative orientation when amplifying (and, simultaneously, reducing) the possibilities for perception and action through technological means. In the promising light of recent

technological and neurological research, Clark endeavors ambitiously and thoroughly to rethink and revise philosophical anthropology. In doing so he seems willing to sacrifice too much of our lived experience on the alter of computational metaphors, instrumentalized conceptions of agency, and informational and cybernetic models of identity. Moreover, if he turns out to be right, it might be less because the cyborian metaphors and models were descriptively true in the first place, but because the economic and technological contexts in which we become the beings we become succeed at confirming such metaphors and models, because they have become the parameters—discursive and practical—of identity formation that are most dominant and available in the future.

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Notes

[1] Habermas is a notable exception here. His discussions of bioethics place philosophical anthropology back in the center inquiry.

[2] Sheets-Johnson writes: "Fundamental aspects of our humanness cannot be written off as mere cultural inscriptions. They have to do with a history more ancient than we, a history in which the body is precisely not a surface on which any culture can leave its marks—arbitrarily and willy-nilly—but a three-dimensionality, a living, natural form that itself is the source of inscriptions—meanings…This natural form…cannot be 'discoursed' out of existence" (150).

[3] Merleau-Ponty writes: "The blind man's stick has ceased to be an object for him and is no longer perceived for itself; its point has become an area of sensitivity, extending the scope and active radius of touch and providing a parallel to sight. In the exploration of things, the length of the stick does not enter expressively as a middle term: the blind man is rather aware of it through the position of object than of the position of objects through it. The position of things is immediately given through the extent of the reach that carries him to it, which comprises, besides the arm's reach, the stick's range of action" (1962, 143).

[4] We are not assuming that the possession (or lack there-of) of a technology correlates directly or causally with the possession (or lack there-of) of a narrative sense of or capacity for "independent identity." On the contrary, it is easy to imagine a stick-enhanced and stick-skilled blind man being narratively more impoverished than a narratively enhanced and skilled blind man without a stick. Nor would we argue that contemporary possessors of technology are, merely because they are possessors, necessarily better positioned narratively to assert one thing or the other about their identities. The issue of concern above is the range of ways in which the *boundaries* of identity might be adjusted.

[5] Steven Johnson writes: "Consider how I used the tool in writing my last book, which revolved around the latest developments in brain science. I would write a paragraph that addressed the human brain's remarkable facility for interpreting facial expressions. I'd then plug that paragraph into the software, and ask it to find other, similar passages in my archive. Instantly, a list of quotes would be returned: some on the neural architecture that triggers facial expressions, others on the evolutionary history of the smile, still others that dealt with the expressiveness of our near relatives, the chimpanzees. Invariably, one or two of these would trigger a new association in my head—I'd forgotten about the chimpanzee connection—and I'd select that quote, and ask the software to find a new batch of documents similar to it. Before long a larger idea had taken shape in my head, built out of the trail of

associations the machine had assembled for me." Reflecting on how this computer assisted process of research led to new ideas emerging, Johnson asks: "Now, strictly speaking, who is responsible for that initial idea? Was it me or the software? It sounds like a facetious question, but I mean it seriously. Obviously, the computer wasn't conscious of the idea taking shape, and I supplied the conceptual glue that linked the London sewers to cell metabolism. But I'm not at all confident I would have made the two very different kinds of intelligence playing off each other, one carbon-based, the other silicon…. there's a fundamental difference between searching a universe of documents created by strangers and searching your own personal library. When you're freewheeling through ideas that you yourself have collated—particularly when you'd long ago forgotten about them—there's something about the experience that seems uncannily like freewheeling through the corridors of your own memory. It feels like thinking."

[6] Again, not to be cagey but, rather, cautious, we are hesitant to endorse some of the conceptual assumptions that might be underlying Clark's and Johnson's experiential reports of "hybrid identity." Johnson's report on his increasingly technologically interwoven experience of authorship is indeed suggestive and provocative, but one might well wonder if his interaction with the combined anomaly and power of computational and programmed aids to writing is sufficient to suggest that *identity*, even if hybrid, is what's at stake, or, if identity is at stake, if it is because identity is "computational" (cyborg) all the way down. In effect, one might still want to distinguish between functions and processes that have indeed been transformed – authorship, say–and identity itself–whatever that might be. An anti-essentialist view of identity need not by itself entail a computational conception of the being about which/whom we are inventing concepts of identity.

[7] As Arthur and Marilouise Kroker note, there is a unifying rubric that captures the different ways that subjectivity and embodiment can be de-centered—"postmodern" power: "For we live under the dark sign of Foucault's prophecy that the bourgeois body is a descent into the empty site of a dissociated ego, a "volume in disintegration," traced by language, lacerated by ideology, and invaded by the relational circuit of postmodern power" (20).

[8] Galison writes: "Cultural meaning is neither aleatory nor eternal. We are not free by fiat alone to dismiss the chain of associations that was forged over decades in the laboratory, on the battlefield, in the social sciences, and in the philosophy of cybernetics…What we *do* have to acknowledge is the power of a half-century in which these other associations have been reinstated at every turn…" (265).

[9] Rheingold's conclusion comes from observations of the mentality associated with a Wi-Fi link that allows users to learn of other people's musical tastes by downloading their MP3 playlists: "Whenever Kortuem sits down with another participant in his ongoing experiments at the University of Oregon's Wearable Computing Lab, his iPAQ establishes a Wi-Fi link with his colleague's device. It checks the user's identity, and if the person is someone whose taste Kortuem has noted as trustworthy, it downloads an MP3 playlist ranked according to frequency of plays…As he sees it, the crowds who surround us every day constitute a huge waste of social capital. If you live in a city for instance, there are many who pass within a few yards of you each day who could give you a ride home, buy an item you're trying to sell, or consider you as dating material. Dynamic networking makes it possible to tap those resources through a momentary alliance among transient interest groups, 'like people working in a given neighborhood, staying overnight in a certain district, or taking the 10:15 flight to Chicago,' Kortuem explains."

[10] Clark writes: "We are thus invited to imagine the following scenario taking place on a university campus: To find the library, you simply enter 'library' in a handheld guide-box and don a special pair of eyeglasses. As you look around, you see a giant green arrow take shape in the sky, pointing at the roof of a library! Looking down at the path, you see smaller arrows indicating the best route. Hanging in the air around your body you notice a variety of small icons offering you other local services. To use them, you just reach out and 'touch' them, sending position and motion information through sensors in your clothing" (52).

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