Bodies and Technologies: Transformation of Human Experience

Arun Kumar Tripathi [•]

Abstract

Computer technology provides a new way of understanding the world by virtue of having bodies. There are multiple ways in which any single technology may be related to users and multiple ways in which each technology is culturally embedded. In this essay, I epitomize the postphenomenological experience in human-technology relations, to realize various structural features of human vision for the technologically mediated world, which is centred upon the ways we are bodily engaged with technologies in the concrete praxis.

Keywords

Embodied mind; Enhancement; Postphenomenology; Interface; Biotechnology; Cognitive science.

INTRODUCTION: INCORPORATING NEW TECHNOLOGIES

Since the human race began, human invents technology: technology invents humans. The characteristics that make us human will continue to be manifest in our relationship with technology. Technology has been woven into the social and cultural fabric of different cultures. All humans have a material culture with complexly patterned praxes involving artifacts –we have only recently begun to appreciate the completely of even what may be called technologically mediated cultures. Technologies either magnify

[•] Central University of Tibetan Studies, Sarnath. Independent Scholar. Email id: tirelessarun@gmail.com

or amplify human experiences. They can change the ways we live. This non-neutral, transformative power of humans enhanced by technologies is essential feature of the human-technology relations. Technologies are the extension of our bodies. The technological form of life is part and parcel of culture, just as culture in the human sense inevitably implies technologies.

Modern technologies either implicitly or unequivocally relate to human perception, and they also point to the 'whole body' style of perceiving which we experience. The phenomenological underpinning of technology has a force on the cultural environment of technological development. Technologies have become extended sense organs, enabling perception of realities. Complex technologies teach us new things about our perception & relation to the world. Human perception is enhanced by incorporating new technologies. Contemporary technologies either implicitly or explicitly relate to human perception.

Technology has virtualized the body and enables me to extend my reach. An extension requires the retention of the physical body. Merleau-Ponty (1965) describes this extension in his example of a blind man and the extension of the man's sense of touch through his walking stick. The experience we receive with technologies, is greatly influenced by the body dimension.

We are increasingly using new technologies to change ourselves beyond therapy. In accordance with our own desires, understanding the challenges of human enhancement has become one of the most urgent topics of the current age. Gordijn and Chadwick (2009) contribute to such an understanding by critically examining the pros and cons of our growing ability to shape human nature through technological advancements. Human embodiment is presupposed in and by our technologies, particularly those related to the production of knowledge, including scientific instrumentation, communication technologies, and the new forms of virtual reality, simulation and modelling devices.

Don Ihde (1990) comments **"**Embodied relations with technologies represent the case where, I take the technology into my experiencing in a particular way by way of perceiving through each technology and through the reflexive transformation of my perceptual and body senss**"** (p. 73). *An example of this type of relation is wearing eyeglasses.* In this relationship with technology, not only is my bodily sense extended, but I see not just with my eyes but with my whole body in a unified sensory experience of things (Ihde,

1990, p. 77). *Computers extend our ability to gather information and to learn outside the confines of geographic region and time.*

New technologies lead to a new kind of human being - one embodied in a new technologically enhanced body. Homo is indeed *homo faber*, and he becomes more so every day. This is the new technologically enhanced human being – who is not an objective artefact (a technology) but a subjective artefact of the new technologically enhanced (perceptually, cognitively, and desire- and institutionally-oriented) human subject. The social/cultural changes that this brings about are usually neither determinate nor generally foreseeable; and, because of this, the changes will demand special oversight. This new technologically-enhanced human being opens up the social imagination of users to new worlds in which there is a redistribution of powers, such as powers to intrude into and manipulate the lives of others with or without their knowledge; powers to snoop, deceive, acquire resources secretly, defeat traditional rights and privileges as well as power to depose existing institutional authorities. The changes in the making of this new human being are unforeseeable and will eventually demand changes in ethics, laws, social structures, accountability, and institutions.

Mind, Andy Clark argues, it is increasingly fashionable to assert, is an intrinsically embodied and environmentally embedded phenomenon. But there is a potential tension between two strands of thought prominent in this recent literature. "One of those strands depicts the body as special, and the fine details of a creature's embodiment as a major constraint on the nature of its mind: a kind of new-wave body-centrism. The other depicts the body as just one element in a kind of equal-partners dance between brain, body and world, with the nature of the mind fixed by the overall balance thus achieved: a kind of extended functionalism" explains (Clark, 2007 & Clark, 2008).

Andy Clark astutely argues that recent years have seen an explosion of work, both in philosophy and across the many sub-disciplines of Cognitive Science that is now typically glossed as belonging to the investigation of the mind as 'embodied and environmentally embedded' (Clark, 2008). The phrase 'mind as embodied and Embedded' seems to have been coined by John Haugeland in a similarly titled paper that was circulating widely in the early 1990's and that later appeared as Haugeland's *Having Thought (1998*). There, Haugeland writes that:

> If we are to understand mind as the locus of intelligence, we cannot follow Descartes in regarding it as separable in principle from the body and the world…Broader approaches, freed of that prejudicial commitment, can look again at perception and action, at skillful involvement with public equipment and social organization, and see not principled separation but all sorts of close coupling and functional unity…Mind, therefore, is not incidentally but intimately embodied And intimately embedded in its world (Haugeland, 1998: 236-237).

It is important to explore, *how technologies help to shape human "knowledge" and understandings of the world.* When human understanding and perception is mediated through technological devices, then also the knowledge is mediated through the technological devices.

EMBODIED TECHNOLOGY AND POSTHUMAN EYE

Technologies do become embodied, but never totally nor in fully transparent ways. That is how they give us the powers and possibilities we would not otherwise have. But the price of this power entails a subtle and graded sense that while we use and even partially embody our technologies, we also ultimately remain the contingent humans we are. The very ability to step into a multiplicity of our technologies—and thus to also step out of them—is the existential indicator of this constraint for even the best simulation. It is also the point which calls for our constant need for critique (Ihde, 2004).

Don Ihde (2006) argues that movies like the *Matrix* trilogy play upon fantasy in a technological context and relate to the human sense of embodiment. Ihde argues that contemporary technologies are use to explain some of effects and implications for „mind" and embodiment in the film *Matrix*. Ihde points out to an important fact that we have to experience the embodiment where we live, rather to "plug-in" into a technofantasies world.

Postphenomenology, as Ihde (2009) contends, substitutes embodiment for subjectivity. According to Ihde, postphenomenology is an attempt to overcome modernist epistemology with its Cartesian "subject/object" and "internal/external" splits. But, as a point of departure from the phenomenological tradition, it draws explicit

inspiration from early strands of American pragmatism. Bodies cannot be transcendental; they are existential (Merleau-Ponty). Ihde argues that with Merleau-Ponty one could see that subjectivity is not something limited to being inside the box as „Truth does not 'inhabit' only 'the inner man', or more accurately, there is no inner man, and in the world, and only in the world does he know himself." (pp. xi)

Verbeek (2007) has given the best description about the human vision of technologically mediated lifeworld by elaborating three approaches 'modern', 'postmodern' and 'posthuman' to the questions as What does this imply for 'the human condition' – the state of being of people living in this technological culture? What kind of subject emerges from these technological mediations? And how do the visual arts help to produce and understand these subjects? These approaches have strongly differing, Verbeek says, analyses of the relations between human beings, mediating technologies, and reality.

On *the phenomenon of technological mediation,* Verbeek (2007) radicalizes Don Ihde's phenomenological approach of technology and offers a valuable framework in his work. In their analysis, Ihde and Verbeek understand technological mediation as the role technology plays in the relation between human beings and their world. Verbeek writes that „Ihde discerns several relationships human beings can have with technological artifacts." I agree with Ihde and Verbeek that technologies can be 'embodied' by their users, making it possible that a relationship comes about between humans and their world, and also technological artifacts are 'incorporated' here, as it were: they become extensions of the human body.

As an example that, technologies become extensions of the human body, let me illustrate the research objective of the NASA's Extension of the Human Senses group. It's research to develop novel algorithms for modeling and pattern recognition in dynamic non-stationary environments. The work encompasses all stages of using neuro-electric signals for augmentation including: data acquisition, sensor development, signals processing, modeling, pattern recognition, interface development, and experimentation. This research group specializes in developing alternative methods for human-machine interaction as applied to device control and human performance augmentation. *Signal processing environment* – EHS has developed a distributed data flow based Signal Processing

Environment for Algorithm Development (SPEAD). The Extension of the Human Senses group (EHS) focuses on developing alternative human-machine interfaces by replacing traditional interfaces with bio-electric control and augmentation technologies.

In *Leib, Körper und Maschinen* Donn Welton (2004) addresses the relationship between the body and machines. But the distinction that Husserl introduced means that the topic is more complicated than we first thought. We must first sort out what we mean by body and then see if the way we are thinking of it gives us insight into how the body is involved with machines. Indeed, the term machines needs to be qualified as well, for Welton will not deal with technologies in a broad sense[1] but only with a certain set of machines that are directly used or incorporated into the body. The lived body is often analyzed as the body experienced "from the inside" while the physical body is treated as the body experienced "from the outside." This difference is then justified by a series of contrasts, some receiving more attention than others, argues Welton (2004).

CULTURAL PERSPECTIVE OF EMBODIMENTS AND TECHNOLOGIES

"Being bodies" according to Ihde replaces the 'subject' by embodiment. Merleau-Ponty in his works drew his distinction between the 'objectively' constituted body, the mechanical and third-person constituted body of the Cartesian sciences and the *corps vecu* or lived body as experiencing body. This is the body-in-action, outside itself already in a world. Living my body is simultaneously and yet experientially being both inside and outside (Ihde, 2009a).

Verbeek (2015) elaborates that, technologies can be seen as extensions of the human; there can be a dialectics between humans and technologies; and human–technology relations can be approached in terms of hybrids. Our perceptions and experiences, our actions and ways of living, all these elements of human existence take shape in close interaction with technologies. The concept of technological mediation can be helpful in investigating this hybrid character of human–technology relations (see Verbeek 2015).

[1] For this, see Don Ihde, 1990.

Nagataki and Hirose (2007) in their paper argues that Andy Clark points out, there are two different methods within the trend to set importance on the body in cognitive science. The first is called "simple embodiment," which treats features of the body and its interaction with the environment as constraints upon a theory of inner organization and processing. The second, which is called „radical embodiment," goes much further and treats such facts as profoundly altering the subject matter and theoretical framework of cognitive science. They comment that Clark (*1999*) writes; „the distinction between the simple and the radical forms is, however, not absolute, and many (perhaps most) good research programs end up containing elements of both" (p. 348). But most researchers who apparently take the radical form criticize the view which appoints inner organization and processing made by explicit inner representations as the leading part of cognition.

From *Technics and Praxis* (1979) through *Technology and the Lifeworld* (1990) Don Ihde version of an *embodied intentionality* was one which examined the placement and role of our use of, interaction with, and subsequent mutual constitution of our *technologically textured world* and *embodied being*. I agree with Ihde that what remains phenomenological is the inter-relationality of embodied being in a concrete and material world. If I 'make' technologies; they, in turn, make me (Ihde, 2004). What is different about this postphenomenology in a nuanced change from classical phenomenology, is the thematizing of materiality, particularly in the form of instruments and devices by which we make 'worlds' available to us which were previously unexperienced and unperceived. Instruments are the means by which unspoken things 'speak' and unseen things become 'visible' (Ihde, 2009a)

Ihde (2009b) shows that computer processes linked to imaging technologies give us a style of instrumentation in which, *by virtue of inversions and transpositions,* give us tools for producing radically new visualizations argues (p. 465). Ihde (2009b: 465) claims that "what makes technologies valuable for human practices are the non-neutral transformational capacities of these technologies. It is the subtle and profound transformation of experience." Ihde (2009b: 453) notes "Although it is not often noted, Albert Einstein often used human bodily experiences to illustrate his physical theories." Postphenomenology, in a complementary role with other science studies disciplines, remains within the trajectory of those theories which reject early modern epistemology

and metaphysics, including rejection of 'subject'–'object' distinctions, and holds, instead, to an inter-relational, co-constitutive ontology (Ihde, 2012, p. 369).

Perceptions are bodily activities, not the actions of some homunculus inside a *camera obscura* box looking at mental images which represent something 'out there.' In phenomenology, variations are the means by which *possibility structures* are discovered, Ihde says. "Because such materiality *does selectively transform,* it also *magnifies or amplifies* certain possibilities while *reducing or dampening* others" (Ihde, 2003).

Perception is mediated by technologies and instruments. Perception is a hermeneutical activity. There is a relationship between hermeneutics and perception. In this way, perception can be called as a hermeneutical act. While perceiving the objects, you are also interpreting the object that is why perception is a hermeneutical act. In our material culture, we are encountering people living with different worldviews ('ways of seeing'), but still they survive together. This is the reason, we have a tacit understanding of Being, which is embodied in our cultural practices and language.

The bodily, conceptual and perceptual habits this person has developed enable conscious attention to be directed to the tasks being performed with the computer, rather than on the technological mediation.

French philosopher Maurice Merleau-Ponty does teach that we have an 'embodied Mind' or exist as 'incarnate-selves'. Merleau-Ponty teaches us that the body is the source of our knowledge of the world precisely because in its physicality – but not its self-awareness it is an entity like every other entity in the world as seen from the phenomenological standpoint. To see one must be visible, to touch one must be able to be touched. Human beings are different than animals and other things by virtue of their capacity to distantiate themselves from the "incarnate-self" (the 'self-awareness' of the innate human structures).

The body and world to which we attend in phenomenological self-awareness attended is the primordial ground of all of our experiences. Embodiment and openness of body gives us a deeper emotional understanding and assist us, of how to live in the world with others and how to experience the world with others. In his 1963 doctoral dissertation, "The Human as Material Subject of the World", Samuel Todes starts with Merleau-Ponty's account of the lived body and goes on to develop a description of the

structure of the active body and the role that structure plays in producing the self-aware spatio-temporal field of experience, which he later elaborates, how the self-awareness of the spatio-temporal makes possible 'objective' knowledge in the sense of 'separateness' of the subjects that show up in it, to assist us to understand, of how our incarnate – not just our physical bodies an integral part to experience the world with others and how important our body plays in our understanding the world.

We can attain explicit knowledge of the world through our understanding with the world, by virtue of having bodies that are self-aware. We can find answers to questions involving the self-aware body by using our physical body in the world. Human beings respond only to the changes that are relevant given their self-aware bodies and their interests, so it should be no surprise that no one has been able to program a computer to respond to what is relevant. Self-aware Bodies are important for making sense with the world. Forms of life are organized by and for beings physically embodied like us. Our self-aware embodied concerns so pervade our world that we don't notice the way our self-aware body enables us to make sense of it.

The body is not to be understood as a medium between me and the world. Rather, our primary being-in-the-world has the form of an embodied existence. Thus, we cannot first study the body, and next investigate it in its relation to the world. I can say "we are navigating the world through our bodies." The world is given to us as bodily explored, and the body is revealed to us in its exploration of the world.

POSTPHENOMENOLOGY OF TECHNOLOGICAL TRANSFORMATION

Technological mediation concerns the role of technology in human action (conceived as the ways in which human beings are present in their world) and human experience (conceived as the ways in which their world is present to them).

Ihde's and Verbeek's work, and the work of others (including Selinger and Rosenberger) that build on his ideas, is referred to as postphenomenology. Postphenomenology tells us about the importance of phenomenology in postmodern era, which diverges from classical phenomenology, such as in its focus on technological mediation, its reliance on "case studies" more familiar to the field of science studies and its kinship with many of the ontological commitments of American pragmatism (Ihde, 2009a; Rosenberger & Verbeek, 2015).

Rosenberger (2015) illustrates "Technologies such as pacemakers and neuro-stimulators have the potential to disrupt the typical postphenomenological conception of human-technology relations because this perspective so far has focused mainly on how users engage with devices through bodily interaction and perception….Multistability refers to the capacity of any technology to support a variety of uses and meanings. This idea is often wielded by postphenomenologists against totalizing accounts of technology that fail to recognize the variability and context-dependency of human-technology relations….In all of these cases, the technology plays a "mediating" role in human experience, coming between the user and the world, and transforming them both in the process elaborates" (pp. 130-133).

Phenomenology arose as an attempt to overcome the tension between idealism and realism. Phenomenology thus overcomes the dichotomy between subject and object, human and world, by replacing it with a mutual interrelation (Verbeek, 2005: 110). Phenomenological tradition gives emphasis on the notion of embodiment, the notion of an embodied mind or a minded body, is supposed to replace the ordinary notions of mind and body.

Phenomenology, even more postphenomenology, Ihde (2012) holds, *rejects this entire Cartesian tradition.* Instead it opts for situated knowledge, but with an inter-relational ontology (p. 370). The ontology of postphenomenology is inter-relational (Ihde, 2012). Secondly Ihde (2012) shows that postphenomenology attempts to move farther from early modern epistemology by, as it were, substituting *embodiment* for *subjectivity*. Here there lies some implicit Merleau-Ponty vis-à-vis Descartes—rather than a subject in a *camera*-body-box, the embodied human is "already outside itself in the world." What postphenomenology in relation to technoscience focuses upon is the way the human in science *praxis* embodies instruments (p. 370).

According to Ihde, classical phenomenology, first under Edmund Husserl, was formulated within a specific historical context in which "modern" philosophies dominated. The philosophy of this period was "modern" with its distinctions between "subject/object," "body/-mind," "external/internal" worlds, and for Husserl was largely exemplified by Descartes and Kant. For science, Ihde comments, the early twentieth-century philosophers of science tended to characterize science as a largely abstract,

mathematized practice which was primarily theory-driven. And, regarding technology, neither philosophy nor science could be said to be sensitive to the roles of material technologies. Further, Ihde (2009a) contends that Husserl's phenomenology as a new „rigorous science" attempted to radically challenge these notions. For example, Husserl's Cartesian Meditations challenged and inverted Descartes, and his Crisis challenged the early modern notion of science. Yet, in spite of this, the shadows of the modern remained attached to classical phenomenology, which ironically became known as a "subjectivist" philosophy. Later Don Ihde (2009a) reviews some of the major changes in the escapes from early modern philosophy, others in the philosophy of science, and others, which enhanced the sensitivity to material technologies. Then, returning to phenomenology in a contemporary setting, Ihde makes a case for a postphenomenology. Putting briefly, Ihde succinctly comments, such a modified phenomenology, would (a) substitute strands of pragmatism, which retains a strong notion of experience in its interpretive framework, but does so without falling under the shadow of early modern philosophy; (b) retain and enhance the central roles of phenomenological variations, perception and embodiment, and the role of practice as central to phenomenology; (c) and, finally, incorporate the now so-called empirical turn which characterizes contemporary philosophy of technology with its concreteness of science and technology studies (Ihde, 2009a)..

Don Ihde Consequences of Phenomenology, with a specific response to Rorty was published (1986). Indirectly, what Rorty had succeeded in doing for me was to help me see that while both Dewey and Husserl had similar anti-Cartesian programs, similar philosophies based upon human experience, and both produced what can be called inter-relational ontologies, the pragmatist program succeeded in avoiding precisely the "subjectivist" cast which Husserl's too-close use of subjectivity, philosophy of consciousness and subject/object language could not avoid. And while Husserl's ego-cogito-cogitatum version of intentionality was clearly an inter-relational ontology, Dewey's adaptation of a (creative–imaginative) organism–environment model also succeeded in not appearing to be either subjectivist or anti-scientific. Pragmatism had much to offer to phenomenology in just this sense Tripathi (2016: 236 – 238).

According to Ihde (2009a) it can be seen, that while there were marked differences between these early philosophers of technology—for example, most of the Europeans were interested in technology-in-general, were mostly critical or took a

dystopian attitude, whereas the Americans tended more towards optimism and in some degree were more empirically oriented. One could note that it was the praxis philosophies: Marxism, pragmatism, and phenomenology—that developed the interest in the material culture.

Kapp's theory of extension of human body seems quite plausible. But as technologies get more complex, it is more difficult to see in what sense they are extensions of our human bodies. Instruments tell the inadequacies of human body (Tripathi 2015: 200).

Technological mediation concerns the role of technology in human action (conceived as the ways in which human beings are present in their world) and human experience (conceived as the ways in which their world is present to them) (Tripathi 2016: 237). By exploring postphenomenology, Ihde (2009) addresses the cultural role of technologies in relations to perception, multiculturalism, and technoscience, and gives special consideration to the impact of image technologies, such as television and cinema, upon the contemporary world.

In *Embodied Technics* (Automatic Press/VIP, 2010) Don Ihde *has* addressed a number of perspectives on our embodied and mediated experience with and through contemporary technologies, as in media studies, science studies, cultural studies—and in much philosophy—there is much attention to questions concerning the human-technology interfaces we all experience. Some thinkers hold that the new technologies of media, imaging, and digital-computational technologies *disembody* the human. Such technologies are thought to take us away from ordinary and face-to-face experience and *distance* us from others, nature or even objects. Scholars coming from phenomenological or postphenomenological positions, argue that our contemporary technologies actually *embody* or *re-embody* our fleshly experience in new ways, in interactive ways, says Ihde.

Do the tools of technology transform human experience? This seems to me, is a central question in the philosophy of technology linking social sciences and humanities. How does science transform experience in our everyday life? How bodies are experienced, and with how forms of subjectivity and existence in their relations to multiple material forms can be captured through anthropological, psychological and

philosophical modes of investigation? Ihde has precisely expanded the above thesis of *human experience with tools in everyday life* as *four relations* in his *Technology and Lifeworld*. Ihde (1990) argues that human life has always been suffused with technology. Ihde undertakes a phenomenological description of several sets of human-technology relations in order to analyze how technologies often mediate and transform our experiences. The contributions of Ihde to the philosophy of technology, now going back more than 40 years, were a direct development from the phenomenology. In contrast to Husserl, who rarely referred to technologies — excepting his insights about writing and of measurement practices — it was more Merleau-Ponty and Heidegger who suggested a possible line of development. Ihde referred to this work which includes an analysis of Merleau-Ponty's blind man's cane and the feather-hatted woman, and extensively with respect to Heidegger's tool analysis [see *Technology and the Lifeworld* (Indiana, 1990)]. However, in his book "Husserl's Missing Technologies" (Fordham University Press, 2016), Ihde (in his analysis of Husserl) ventures through the recent history of technologies of science, reading and writing, and science praxis, calling for modifications to phenomenology by converging it with pragmatism. This fruitful hybridization emphasizes human–technology interrelationships, the role of skilled embodiment, and the inherent multistability of technologies. In this perspective, technologies do have a powerful cultural variant, and it is thus important to study the "cultural variability" of postphenomenological mediation of technologies (Tripathi, 2017: 140). Embodiment, *being a body,* is a constant within postphenomenology. But since bodies are actively perceptual and culturally-historically constituted, postphenomenology would take account of the variations and possibilities of diverse embodiment. Variational analyses provide the methodological style of this approach (Ihde, 2009a). It is important to develop new skills and imaginations to be creative through new technologies. I have tried to illustrate the phenomenological experience in human-technology relations, to discover a variety of structural features of human vision, which is centred upon the ways we are bodily engaged with technologies in the concrete praxis.

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