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Introduction to Postphenomenology Discussion

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Postphenomenology: A Critical Companion to Ihde (SUNY Press: 2006) is an edited volume dedicated to furthering the following goals.

The book aims to distill the essence of Don Ihde's central contributions to philosophy and a range of other disciplines that analyze technology, science, and embodiment.

The book expands the extant dialogue on Ihde's contributions (2a) by inviting him to respond to a range of critical issues that he discusses in different areas of his extensive *oeuvre*, and (2b) by articulating areas of future research that postphenomenological insight can illuminate.

The essays collected here in *Techné* are revised versions of talks presented at the last meeting of the Society for the Philosophy of Technology. In both contexts, Val Dusek, Larry Hickman, Dennis Weiss, and I collectively further the goals just listed, with each philosopher placing emphasis upon different themes.

- Hickman enhances our understanding of Ihde's relation to pragmatism.
- Dusek furthers the dialogue between Ihde and Marxists through a discussion of Edgar Zilsel.
- Weiss structures his interrogation of Ihde through core themes found in philosophical anthropology and thereby advances intra-disciplinary inquiry.
- I follow-up on the normative issues raised in my chapter to *Postphenomenology: A Critical Companion to Ihde*.

Keeping with the structure of *Postphenomenology: A Critical Companion to Ihde* and the aforementioned conference, this contribution to *Techné* concludes with Ihde replying to his interlocutors.

Postphenomenology and Pragmatism: Closer Than You Might Think?

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Abstract
In this commentary on Evan Selinger's book *Postphenomenology: A Critical Companion to Ihde*, I begin with Carl Mitcham's claim that with respect to Don Ihde's "postphenomenology" there are "challenges both to and from pragmatism." I discuss four points on which postphenomenology and pragmatism seem to be in agreement, and then two points on which I believe pragmatism offers a program that socially thicker.

Keywords: Pragmatism, Postphenomenology, Dewey, Ihde, Heidegger, Instrumentalism

Introduction

When I picked up Evan Selinger's *Postphenomenology: A Critical Companion to Ihde*, the first essay I turned to was the one by Carl Mitcham. This was due in part because anyone familiar with our discipline knows that Mitcham's historian's eye overview of the philosophy of technology is without equal. I therefore hoped that he would discuss some of the points of contacts – and some of the differences – between Ihde's phenomenological take on technology and the pragmatist view that I have advanced as representing the insights of John Dewey. I was not disappointed.

Of course Mitcham is correct to indicate, as he does on page 27, that my own work is not exactly straight-up Dewey. I have in fact attempted to push Dewey's insights beyond what is there on the printed page – and in the electronic record of his correspondence – in order to see where they lead, and what contribution they can make to the ongoing discussions within various strands of our discipline. It is in this connection that I am most interested in Mitcham's suggestion that with respect to Don Ihde's work "there are both challenges to and from pragmatism. The challenge to pragmatism is to consider what Ihde's phenomenology of human-instrument relations might imply for pragmatist instrumentalism. The challenge from pragmatism is to consider in what ways Ihde's phenomenology might be a basis for societal, political, and technological reform" (Selinger 2006, 27).

Beyond Dystopianism

Now even relatively inattentive readers of Ihde's work will probably have noted certain points of agreement between his "postphenomenology" and Dewey-type pragmatism. First, there is a rejection of the dark, brooding dystopian warnings of some of the early members of the Frankfurt school. To be fair, philosophers such as Adorno were as a matter of fact living and working in a dark, dystopian era in which technology tended to be identified, as Ihde properly points out, with military/industrial tools and the techniques of totalitarianism and death. We know that some of them had to flee their native countries as a result of that situation, and that some of them even died before they got to their destinations. But is it fair to lay the blame for those circumstances at the door of technology? And what does it say about their conception of technology that they would do so?

Ihde is clearly pragmatic on this count: dystopian type approaches to understanding the relation of human beings (and other animals as well) to their tools have cast a dark shadow over the type of research that can illuminate such relationships. And this is surely what Ihde's own research is about. For Ihde, research is descriptive postphenomenology, where "post" means something very much like Dewey's anti-foundationalism, anti-essentialism, functionalism, perspectivism, emphasis on the interplay between means and ends, and rejection of the fact/value split. For Dewey it was, of course, all of these things as they promoted research into the way we communicate, the way we think, and the ways that we can create tools for our schools and our publics that can be utilized to enrich experience and thus promote the growth of individuals and communities.

Beyond Romanticism

Second, there is Ihde's famous – or if you are one of the Heideggerian faithful, his *infamous* – rejection of the type of romanticism that characterizes Heidegger's post-WWII work. Here again, Ihde and pragmatists of the Deweyan sort are on the same page. Ihde goes about this in a way that exhibits his own version of "truth as un-concealing," and he does it in terms that are at once both deeply informed and, at least to some, highly entertaining. His now-famous riff on the Shoreham Nuclear Reactor, set against Heidegger's own riff on the Greek temple, surely un-conceals what was concealed, and therefore arguably false, in Heidegger's appreciation of the ambiance in which "Tree and grass, eagle and bull, snake and cricket first enter into their distinctive shapes and thus come to appear as what they are" (Ihde 1993, 104). In response to this, Ihde does a little background research and finds out the story behind the backdrop to the Acropolis, that is, the "bare dry mountains. . . and the ruins of an environment which they [those temple-building Greeks] desolated..." (Ibid.). In short, Ihde notes that Heidegger's paean to the Parthenon fails to take account of the hard reality of ecological devastation.

Dewey, of course, also rejected this type of nostalgic romanticism. He thought that the task of the philosopher is to look to the future – to reconstruct the tools and techniques of the past in ways that render them more appropriate to future action. Nowhere is this more evident than in his social and political philosophy and his philosophy of education. As for his reading of the history of philosophy and the history of technology, he was highly critical of the Greeks for their inattention to the manner in which their ontologies tended to reflect their defective social structure, and the ways that the concrete tools and techniques of the artisans were expropriated and exploited in order to construct ontologies that he thought were pretty much over the top in terms of their empty abstractions.

In this connection, Ihde's postphenomenology shares with Dewey-style pragmatism a view about the future of work within the philosophy of technology that has been eloquently articulated by Peter Paul Verbeek in *What Things Do*. For Verbeek, the way forward is to simply "bracket" some of the main themes in classical philosophy of technology, such as the attempts by Heidegger and others to "understand technology from its conditions of possibility, from what must be presupposed in order for it to be possible" (Verbeek 2005, 7). For Verbeek, for Ihde, and for Dewey-style pragmatism, to attempt to apply this "transcendental" approach to understanding technology is simply to get things backwards. Dewey's instrumentalism is concerned with the conceivable practical consequences of tools and techniques, not the conditions for their possibility. You can see this clearly enough in his groundbreaking 1905 essay "The Postulate of Immediate Empiricism" (MW.3.158-167)[1]. For his part, Ihde applauds this "empirical" turn.

Practical Arts, Fine Arts

Third, if pragmatic technology refuses to wax nostalgic for the distant unrecoverable past, neither does it accept what Ihde terms "the great difference of evaluation and connotation between art objects and technological objects" (Ihde 1993, 105). Dewey was especially clear about this last point in his 1934 book *Art as Experience*. "It is customary, and from some points of view necessary," he writes," to make a distinction between fine art and useful or technological art. But the point of view from which it is necessary is one that is extrinsic to the work of art itself. The customary distinction is based simply on acceptance of certain existing social conditions.I suppose the fetiches of the Negro sculptor were taken to be useful in the highest degree to his tribal group, more so even than spears and clothing. But now they are fine art, serving in the twentieth century to inspire renovations in arts that had grown conventional" (LW.10.33). For his part, Ihde moves seamlessly back and forth from medieval wood cuts and Egyptian papyrus drawings to clocks and radios.

Heidegger's Typewriter

Fourth, on a related point, Dewey's pragmatic technology and Ihde's postphenomenology share a concern with the multivalence of tools and artifacts that tends to be highly constricted within some competing accounts. A case in point is Heidegger's distaste for the typewriter, which he links to what he terms the "destruction of the word" (Ihde 1993, 106). The only way I can read this remark is as, first, an implied recognition of the multivalence of the writing machine, and second, an attempt to constrict its use to the point that it and its users are reduced to a "one size fits all" formula. This case – involving typewriter and typing skills – is just one among many that are indicative, I suggest, of Heidegger's tendencies toward a Procrustean approach to tools and techniques.

What would Heidegger have had to say, for example, to individuals who have been diagnosed with mild forms of ADD – Attention Deficit Disorder? Taking him at his word, and following his constricted view of matters, academic careers would have been cut short absent the typewriter, and later, the computer. For people with even mild forms of this malady, it just takes too long to write in longhand. The train of thought gets lost. Ihde gets this point. McLuhan got it. Dewey got it. But Heidegger didn't seem to get it. It occurs to me to wonder how far those who hold the work of Heidegger in high regard would want to travel down this road. I suspect that it would not be very far. I think that it is appropriate that Ihde raises the issue.

Multivalence

Even though they are in basic agreement, however, I do think, Ihde and Dewey treat the matter of multivalence somewhat differently. For Ihde, multivalence, or what he terms multistability, is the subject of a phenomenological analysis whose descriptive power is both wide and deep. He subscribes to "relativistic ontologies" which, he says, are not relativisms, but rather "take into account both the context and the observer's positionality" (Selinger 2006, 275). In his story, pigs, and even church bells, can and do function in different ways in different contexts. This may be a descriptive enterprise, but it is not one that is otiose. The point of such analysis is, as I understand matters, to open up research possibilities, to begin to see opportunities, and to be able to take into account and appreciate alternative "positionalities." In terms of research programs, Ihde wants to get philosophers of technology out of their traditional role as simply reacting to designs already

formulated and produced. He wants to get them into the R&D phase of the production of new tools and artifacts where they can make a positive difference. His approach also has obvious implications for enhancing cross-cultural understanding and what has been termed "global citizenship."

For his part, Dewey located the issue of multivalence within a larger theory of inquiry which is both descriptive and normative. "Meanings," he writes in *Experience and Nature*, "are rules for using and interpreting things; interpretation being always an imputation of potentiality for some consequence" (LW.1.147). Some eighty pages later he continues this thought. "But meanings, ideas, are also, when they occur, characters of a new interaction of events; they are characters which in their incorporation with sentiency transform organic action, furnishing it with new properties. Every thought and meaning has its substratum in some organic act of absorption or elimination of seeking, or turning away from, of destroying or caring for, of signaling or responding. It roots in some definite act of biological behavior" (LW.1.221).

Notice the dynamic, transactional language that Dewey employs in this passage. It is not just that artifacts have many meanings, some of which are exhibited under certain conditions and others of which are exhibited under other conditions. No. The situation is in fact much more complex than that. Dewey emphasizes the progressive, dynamic function of meanings: they transform organic action, generating new properties. At one point (LW.1.152) Dewey even employs a sexual metaphor, writing of meanings copulating, bringing forth new meanings.

Steve Woolgar and Geoff Cooper provide an example of this phenomenon in a somewhat different context. Langdon Winner had claimed that the bridges over the Long Island Expressway were deliberately designed to exclude busses so that poor people and blacks would be excluded from Jones Beach. With bus timetables in hand, however, Woolgar and Cooper confidently report that "the bridges did not prevent buses traveling down the parkways on Long Island" (Woolgar and Cooper 1999, 435).

Implications of Postphenomenology for Pragmatism

Taking up the first part of Mitcham's challenge, therefore, what can we say about the implications of Ihde's phenomenology of human-instrument relations for pragmatic instrumentalism? The brief answer is that what makes Ihde's postphenomenology "post" instead of "classical" phenomenology is precisely its embrace of certain planks in the pragmatic program, including its anti-foundationalism, anti-essentialism, functionalism, perspectivism, emphasis on the interplay between means and ends, and rejection of the putative fact/value split. Moreover, Ihde's program offers increased dimensionality, increased traction, to what Dewey termed "the denotative method." In *Experience and Nature* (1925), Dewey describes this method, differentiating between "the objects of primary and of secondary reflective experience" (LW.1.15-16). The objects of primary experience set the problems, furnishing data. The objects of secondary experience

> define or lay out a path by which return to experienced things is of such a sort that the meaning, the significant content, of what is experienced gains an enriched and expanded force because of the path or method by which it was reached. Directly, in immediate contact it may be just what it was before – hard, colored, odorous, etc. But when the secondary objects, the refined objects, are employed as a method or road for coming at them, these qualities cease to be isolated details; they get the meaning contained in a

> whole system of related objects; they are rendered continuous with the rest of nature and take on the import of the things they are now seen to be continuous with. (LW.1.16)

In short, what Mitcham terms Ihde's "pragmatic phenomenology" provides excellent examples – case studies – of the ways that Dewey's denotative method works, and how it can be enhanced. And this is no small matter. First, because there are other, less successful competing methods that many people nevertheless find highly attractive and that seek to supplant the denotative method. And second, because the denotative method is the basis for successful research in the technosciences.

Implications of Pragmatism for Postphenomenology

But what of the second part of Mitcham's challenge – the challenge from pragmatism "to consider in what ways Ihde's phenomenology might be a basis for societal, political, and technological reform"? It is here that we encounter the problem of normativity. To be sure, the core of Ihde's project is descriptive phenomenology. But there is much more to the story. First, as I have indicated, the point of his project is to open up new avenues of awareness of the world of tools and artifacts in which we live and which provide novel research possibilities. And second, there is a stated sympathy with the "neo-enlightenment" strain in American pragmatism that looks very much like what Dewey described as relatively stable "platforms" of action.

Nevertheless, I am afraid that I will have to take the side of certain of Ihde's critics, including Mitcham and Paul Durbin, who would like to see him address more fully some of the implications of his work for social and cultural reform. My modest suggestion is that one of the ways this could be effected would be through the application of his insights to primary and secondary school curricula, and this with a view to enhancing the students' perceptual-inquirential tools and consequently their appreciation of the richness of our increasingly "globalized" environment.

In addition to the question of the social and political implications of Ihde's work, however, there is another point on which there seems to be an important difference. If I read him correctly, at least in some of his essays, Ihde seems to honor, at least implicitly, a "material technology/culture" split that has deep roots in the history of our discipline, but that is probably long overdue for reconsideration.

A Crucial Difference

All of us who teach courses in the philosophy of technology are, or at least should be, indebted to Ihde for the wealth of case studies and examples that he provides, from sardine cans to Necker cubes, to drawings of Egyptian gardens. Nevertheless, I find it curious that he can write of the "instrumentless navigational techniques" of the great Pacific navigators (Idhe 1993, 24). After a beautiful description of what he terms their "perceptual navigation system," he concludes with the observation that Europeans had difficulty understanding the accomplishments of the Pacific navigators because of their "assumption . . .that instruments must mediate controlled interactions with nature" (Ibid).

Dewey would, I think, have described this situation quite differently. One of his projects was to functionalize the material technology/culture distinction in ways that emphasized what he regarded as an important solution to an ancient and debilitating philosophical problem. In a 1916

address to the Columbia philosophy club, he argued that the traditional philosophical problem of the status of logical entities, for example, could be solved by simply treating them as tools or instruments. When coupled with his argument that the separation between organism and environment is much more permeable than generally recognized, Dewey seems poised to recognize such things as the strategies of the Pacific navigators as legitimate cases of instrumentality. In these cases there is more than just "perception." There is a (cognitive) deployment of conceptual tools and techniques – instruments – to achieve certain goals. For Dewey, the distinction would not have been between the instrument and the non-instrumentally perceptual, but between instruments of different functional types: those that are relatively exterior to the organism and those that are not. The determination and systematic use of patterns of rising and setting stars (the southern hemisphere has no pole star), the classification of wave patterns, and taxonomies of bird flights as aids to navigation are, in Dewey's lexicon, instrumental. (Like Aristotle's protoscientific taxonomies of shellfish, they are locally systematic. Unlike the instrumentalist breakthroughs of seventeenth century science, however, they are not globally systematic.)

Conclusion

I have attempted to make the case that Ihde's postphenomenology and Dewey's pragmatic technology are much closer relatives that they might appear on the surface. I would like to add one final note regarding how much I have learned from Don Ihde over the years. If he had not existed, those of us who teach courses in the philosophy of technology would have to have invented him.

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Endnote

[1] References to John Dewey's published works are to the critical (print) edition, The Collected Works of John Dewey, 1882-1953, edited by Jo Ann Boydston (Carbondale and Edwardsville: Southern Illinois University Press, 1967-1991), and published in three series as The Early Works: 1882-1898, The Middle Works: 1898-1924, and The Later Works, 1925-1953. These designations are followed by volume and page number. MW.3.159-167, for example, refers to The Middle Works, volume 3, pages 159-167.

Ihde's Instrumental Realism and the Marxist Account of Technology in Experimental Science

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Abstract
Edgar Zilsel offers a Marxist account of the rise of experimental science avoiding both crude determinism and the anti-scientific bias of much "Western Marxism." This account supplements Don Ihde's instrumental realism with a social account of the systematic extension of perception by instrumentation. The social contact of non-literate craftspeople with purely intellectual scholars forged the social basis of what became technoscience.

Keywords: crafts, Don Ihde, Marxism, Joseph Needham, scientific revolution, technoscience

Don Ihde has engaged profoundly with Husserl's phenomenology and philosophy of science as well as Heidegger's hermeneutics and philosophy of technology. His work, as Mitcham's article in the Ihde tribute emphasizes (Mitcham), parallels and acknowledges Dewey's pragmatism and brings phenomenology closer to pragmatism. In recent decades Ihde has dialogued with postmodernists and incorporated science and technology studies into his work. However, despite acknowledging the positive aspects of Marxism like phenomenology being a praxis-oriented philosophy, neither Ihde nor the contributions to *Postphenomenology* directly or extensively engaged with mainstream Marxism (although there are some references to aspects of Frankfurt School Critical Theory)."

In this comment on Ihde's work I will focus on the social origins of the integration of imagery, instrumentation, and theory in early modern science. I should like to examine the relation of the social roots of the intimate interaction of picturing or visualization through instrumentation in modern science and technology. These are areas where Marxism has something to contribute to the background of Ihde's instrumental realism.

Ihde has granted that his visualization approach can and needs to be supplemented by a social analysis of science, at least with respect to contemporary "big science." Ihde is sympathetic to feminism along with sociologies of science as part of "clearing the field" with recognition of the wider context of science (Ihde 1998, 145-6, 198). However, he has been much less sympathetic and receptive to Marxist approaches to science.

Possible Reasons for Ihde's Lack of Use of Marxism

Perhaps Ihde's relative lack of engagement with Marxism is in part because the most notable continental Marxists such as the critical theorists Adorno, Horkheimer, and Marcuse (especially the first two) have been extreme technological pessimists or dystopians (Ihde 2006, 178). Marx himself and most "orthodox" Marxists, in contrast, often subscribed to an extreme technological utopianism. (Lenin's emphasis on Fordism and Taylorism as the salvation of socialism is an example.) Many of the other continental *philosophical* Marxists (Ernst Bloch, Georg Lukacs, et al) have focused on aesthetics and literature, not on technology, leaving the latter topic to the Marxist economists.

Selinger notes Ihde's rejection of Marxist technological determinism, which would cause rejection of much "orthodox" Marxism (Selinger 2006, 91).

Marx's influential (because brief and relatively comprehensible) epitome of historical materialism in the "Preface" to *A Critique of Political Economy* has inspired generations of "orthodox" Marxists to be technological determinists (Marx 1859, 20-22). Similarly in the prefaces and postfaces to *Capital* Marx writes of "iron necessity" and gives a highly deterministic portrayal of his views. (Marx's critics commonly cite these passages.) In contrast to the rigid determinism in these brief summaries of his views, Marx's much more extensive analysis of factory technology in *Capital* (Marx 1867) emphasizes the role of control over workers in the shaping of technology (as in the social as opposed to the technological division of labor). Maoism as well as much continental Marxism has emphasized the primacy of relations of production (social control relations) over technology.

In this comment I should like to emphasize the Marxist contribution to the social setting of the origin of what Bachelard and Latour later called "technoscience."

Anti-Technological and Idealist History of Science as a Reaction to Marxism

Ihde writes:

> Edwin Layton noted that historians, "while correctly repudiating the Marxist thesis that the Scientific Revolution was no more than the systematization of the knowledge of the craftsman, overreacted when they came to the converse conclusion, namely that science was prior to and generative of technology." (Ihde 1991, 9)

In fact the Platonic overreaction that Ihde rightly criticizes was (at least in the English speaking world) very much a strong political rejection of Marxism. Mainstream British historians of science were bewildered, shocked and scandalized by the surprise arrival by airplane of a Soviet. delegation of Russian scientific celebrities led by Nikolai Bukharin at the 1931 International Congress on the History of Science in London (Bukharin 1931). The British historians of science were further antagonized by several brilliant, radicalized British scientists (who mainly focused on biology), most notably Joseph Needham, J. B. S. Haldane, and J. D. Bernal. These scientists were inspired by the Bukharin delegation's presentation to write their own Marxist accounts of science (Werskey 1979; Dusek 1990). To oppose Marxism in general and reject the idea that Marxism had any intellectual contributions to their field, historians such as Rupert Hall had to totally deny the technological roots of early modern science. Michael Polanyi reminisced that he also was goaded to his own philosophy of science by reaction to Bukharin's claims (Polanyi 1966; Moleski 2005, 154-5).

The Zilsel Thesis

The position of Marxism on science is more complex and diverse than that in Layton's sketch. Science is not literally reduced to a mere summary of knowledge of the crafts. One theorist of science, Edgar Zilsel has much to contribute to laying the historical and social background to the instrumental realist thrust of modern science. Zilsel's affiliations were with the logical positivists, despite the anti-positivist implications of his sociological and historical theses. (Zilsel's Vienna

Circle connections may account in part for his initial neglect by continental European Marxists). Joseph Needham took up Zilsel's theses on the rise of modern science. Ihde makes use of the work of Joseph Needham on inter-cultural influences on western technology (Ihde 1990, 127-8; 1993, 65), but not of the part of Needham's theorizing influenced by Zilsel on the reasons for lack of experimental and science in traditional China.

The Zilsel Thesis accounts for the rise of modern, Western science in social terms. He accounts for it by the fusion of the work of craftspeople (often initially illiterate) with that of text-oriented intellectuals (often initially ignorant of craft skills and techniques) (Zilsel 1941-1942, Zilsel 2000). Zilsel places this social fusion in the early seventeenth century, the century of the origins of full-fledged modern science. The fusion can be legitimately placed even earlier, in the Renaissance, with the interaction of craftsperson and scholar in the persons of the artist-scientist "Renaissance Men" such as Alberti and Leonardo. (Paolo Rossi emphasizes this earlier dating of the fusion -- with no reference to Zilsel on this topic!) (Rossi 1970). This earlier temporal dating of the social fusion fits with the economic thesis that the social disruption and economic downturns of the Renaissance forced scholars from the university ("wandering scholars") and threw them together with the more lowly artisans.

A less sociological version of the Zilsel Thesis is that the early modern experimental scientists (such as William Gilbert on the magnet) absorbed and incorporated knowledge from the crafts (including the then relatively novel writings by practitioners of the crafts.) A recent, popular development of the Zilsel Thesis and related Marxist social accounts of the origins of early modern science in the crafts is *A People's History of Science* by Clifford Conner (Conner 2005).

Needham's Account of Chinese Science and the Zilsel Thesis

Joseph Needham used Zilsel's thesis to attempt an explanation of the lack of an experimental or technology based science in traditional China in terms of the lack of prestige of craftspeople and the lack of integration of crafts knowledge with scholarly literary culture (with the possible exception of alchemy) (Needham 1969, 134-5, 141-3, 193n1). This lack is all the more surprising given the numerous ancient and medieval Chinese technological achievements far ahead of those of the medieval and Renaissance West as well as numerous observational and natural history records in astronomy and the earth and biomedical sciences not developed or recorded in Europe until much later. These included not only the compass, gunpowder, and printing (that Francis Bacon claimed to show that European moderns had advanced over the ancients), but the rudder, deep wells, iron bridges, sunspots, novae botanical mineral prospecting, seismographs, hormone therapy, and much more as documented in Needham's monumental work (Needham 1961).

Needham's rather romantic identification of Daoism with the Chinese scientific spirit is questionable, given Lao Tzu and Chuang Tzu's opposition to technological innovations. In fact the exception that proves the rule, so to speak, for Needham's thesis is the ancient Mohist School of Chinese philosophers. Their work focuses on optics and mechanics and has many features more resembling Western science than any other Chinese school. (Their ethics: a strange mixture of extreme utilitarianism and Christian-like universal love also has odd resemblances to Western philosophy. Mohists also developed logic, something that no other indigenous Chinese sect did. Their philosophy was only studied again after Buddhism spread in China.) The Mohists were craftspeople, military engineers, and Mo Tzu himself may have been a former slave and is very likely to have worked as a wheelwright. When the empire was consolidated around 200 BCE the independent role of the Mohist sects as military engineering consultants and defensive

mercenaries to various small warring states was eliminated and Mohism disappeared, along with Chinese understanding of Mohist logic and science.

The Instrumentalist-Realist Opposition and the Zilsel Thesis

Zilsel's thesis not only gives a social account of the technological embedding of modern science but also gives a social account of the competing philosophies of science that are synthesized in instrumental realism. Instrumentalism, the treatment of scientific theories as tools for calculation and manipulation was dominant in positivist and earlier idealist empiricist philosophies of science. Realism, in the form of representational realism has been dominant in the self-understanding of many working scientists and replaced the positivist-instrumentalist account around 1960. Karl Popper, a conjectural realist, objects to instrumentalism because instrumentalism makes science indistinguishable from technology. (Of course Popper's purely refutational account of science has great difficulties with technology.) Instrumentalism treats scientific theory as a tool, while traditional realism treats it as a picture. Rossi's social account of Renaissance science describes it as literally a fusion of tool with picture in the work of the Renaissance scientist-artists.

Marxism thus not only contributed to philosophy of technology in its emphasis (or over-emphasis) on the social and political role of technology but also through Zilsel's development of Marxist themes for a social account of the origins of early modern technoscience. Zilsel's version of Marxism can strengthen Ihde's position by filling out an intrinsic social and historical dimension to the account of instrumental realism.

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Human—Technology—World

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Abstract
This essay examines Don Ihde's postphenomological philosophy of technology through the lens of philosophical anthropology, that sub-discipline of philosophy concerned with the nature and place of the human being. While Ihde's philosophical corpus and its reception in *Postphenomenology: A Critical Companion to Ihde* indicate rich resources for thinking about human nature, several themes receive too little attention in both, including the nature of the human being, the emergence of the posthuman, and the place of the human being in our contemporary pluriculture.

Keywords: philosophical anthropology, posthuman, pluriculture, human nature

I

In his "Preface" to *Postphenomenology: A Critical Companion to Ihde,* Evan Selinger notes that this critical assessment of the philosophical corpus of Don Ihde provides an opportunity to "situate, assess, and apply Ihde's philosophy with respect to the primary themes that his *oeuvre* emphasizes" (vii). As neither a phenomenologist nor a philosopher of technology, this opportunity presents challenges for reading (and commenting on) a philosopher of technology for whom a phenomenology of embodiment relations looms so large. And yet that is not quite right, for my passion in philosophy happens to be philosophical anthropology, a discipline perhaps even more marginalized in traditional philosophical circles than philosophy of technology. Even among philosophers of technology, as I have learned from reading several of the essays collected in *Postphenomenology: A Critical Companion to Ihde*, it is rather quaint and perhaps a bit too modern to be concerned with or interested in the human being. More about this shortly.. Philosophical anthropology is that sub-discipline which, as I understand it, is focused on two general questions: "What am I that I am a human being?" and "What is my place in nature (or the cosmos)?" From the starting point of philosophical anthropology, reading *Postphenomenology: A Critical Companion to Ihde* and reflecting on Ihde's work is quite salutary, for a variety of reasons. As a means for structuring my comments, allow me to develop three such reasons, focusing on Ihde's relational trinity human-technology-world. In the following sections, I take this opportunity to situate, assess, and apply Ihde's philosophy by suggesting that the human being has received short shrift in Ihde's postphenomenological philosophy of technology.

II Human

I begin with the human and the suggestion that Ihde's philosophical *oeuvre* would benefit from great contact with the tradition of philosophical anthropology. Simultaneous to reading Ihde and drafting these comments, I was reading the work of Marjorie Grene and preparing an essay on her contribution to philosophical anthropology. Thinking about the title of Ihde's reflective essay in *Postphenomenology: A Critical Companion to Ihde*, "Forty Years in the Wilderness," one gets a rather apt, and to some extent literal, description of Grene's career in philosophy. She is in fact one of two women in the latter half of 20th century Anglo-American philosophy who I think have

made important contributions to philosophical anthropology and yet who have never received much sanctioned attention in official philosophical circles (though in the case of Grene this was somewhat rectified with the 2002 appearance of a volume devoted to her work in the Library of Living Philosophers series). The other is the British philosopher Mary Midgley. But for the purposes of this essay, Grene is the more interesting character because of the many intriguing similarities to Ihde. Grene takes herself to be primarily a historian of philosophy and I recall reading that one of Ihde's planned next projects is a history of philosophy. Grene studied with Heidegger for a short time and, like Ihde, while she had respect for some of his contributions to philosophy, she was certainly no Heideggerian. If anything, she had a real animosity toward Heidegger. She did though have great respect for Merleau-Ponty and her *Philosophical Testament* is imbued with his influence (along with her other mentors Michael Polanyi and J. J. Gibson). Like Ihde, Grene was especially interested in epistemological issues and questions about perception. And like Ihde, she stressed the need to overthrow the Cartesian tradition. Indeed, her interest in philosophical anthropology was driven in particular by her recognition that philosophical anthropologists such as Helmuth Plessner, as well as Merleau-Ponty, offered a post-Cartesian philosophy. Indeed one of her critiques of Heidegger's analysis of Dasien was that it didn't sufficiently break with the Cartesian tradition. The Heideggerian human being, she argues, is "as disembodied as any Cartesian mind could be. It isn't sexed, for example. Nor is it anywhere except in its human world; its place is in no living environment, among conspecifics or predators or prey, in heat or cold, drought or downpour" (Grene 1995: 77). Finally, and more substantively, in terms of their views on philosophy, its task and what it can accomplish, I think Ihde and Grene share quite a bit as well. In this regard, I was particularly drawn to a passage from *Technology and the Lifeworld* that Selinger calls our attention to in his contribution to the volume.

> The philosopher cannot provide formulaic answers to the questions posed, nor are there in any likelihood such simple answers. There are two things that a philosophy can do: it can provide us with a perspective from which to view the terrain… Secondly, a philosophy can provide a framework or 'paradigm' for understanding. (Ihde 1990: 9).

There are three points this passage makes that are instructive. First, philosophy is fallible, admitting of neither formulaic nor simple answers. It is this fallibility which in part leads Ihde to recognize that prognosis in philosophy of technology is either impossible or highly problematic (279). As a number of contributors to *Postphenomenology: A Critical Companion to Ihde* point out, Ihde is reluctant to draw broad and general conclusions about technology. Grene too characterized herself as a dogmatic fallibilist (1995: 3) and I think there is a virtue in reminding ourselves when talking about either the human being or technology there are no formulaic or simple answers to the complex questions posed. Indeed, we should be wary of simple answers for they invariably oversimplify the complex world we are trying to understand.

This brings me to my second point: both Grene and Ihde call our attention to the cartographic role of philosophy. A large part of what philosophy does is try to give us the lay of the land, offer us some orientation in terms of our place in the cosmos. Grene takes this to be key to an understanding of human beings as living beings seeking, "in our funny, artifactual, language-borne way, to orient ourselves in our environment" (1995: 17). I think an important task for both philosophy of technology and philosophical anthropology is addressing this issue of orientation: how do we find our way in today's world? As I mentioned earlier, this is often identified as one of the key tasks of philosophical anthropology and it strikes me as one of those perennial philosophical questions.

Reminding ourselves of the importance of this question regarding orientation and place goes some ways, I think, towards addressing the problem of symmetry as it comes up in several contributions to *Postphenomenology: A Critical Companion to Ihde*, where Ihde is chided for remaining overly human-centered and not embracing stronger versions of the symmetry thesis. I think he is right to be wary of embracing full symmetry. The problem of symmetry in relation to humans and technology is perhaps a late variant to the game of symmetry. Our relationship to animals and nature more generally certainly got there first and attests to our long-standing interest in thinking about ourselves in relation to significant or non-significant others. The issue of symmetry is an age-old one about the drawing of borders and has been a perennial philosophical and human issue. One of the things I am concerned with as a human being is my place in the world, and I am not too sure it helps me to be told that I am simply one thing among many things. It is rather interesting to learn, in reading Andrew Pickering's contribution to this volume, that "the brain can take on many more states than a lump of coal, and that is why it is the supreme organ of adaptation" (216), but when I wonder about my place in the cosmos, I am not too sure it helps tremendously to be shown a homeostat. It really seems to me to raise many more questions than it addresses. And this typically is the problem with an "ontological Theory of Everything," as Pickering supposes Ashby's homeostat is. Such theories are notoriously blunt instruments for explaining anything, much less everything. Similarly, when I read proposals for greater symmetry between human beings and technology, I have to wonder about their implications. In his contribution to the volume, Peter-Paul Verbeek suggests a material turn in ethics and considers the example of automatic speed influencing. But we might wonder why we would want to make driving safer. It's not for the sake of the automobiles. When coming across a crash site (despite perhaps the best efforts of J. G. Ballard), we're not at all confused where the victims start and the technology ends and few are likely to rush to the scene to save the automobile. (Nor, interestingly, does Verbeek wonder why it is that human beings drive fast and resist efforts to keep them from doing so (124).) As Kate Soper aptly puts it in her critique of the symmetry thesis, "The disembodied cyborg hardly seems the icon we want to employ in making plain our objections to torture or indeed to any form of assault upon the flesh" (2003: 108). In the context then of thinking about the cartographic role of philosophy, I find Ihde's stance on symmetry to be refreshing.

This brings me then to the third point that arises in this brief quote that I have turned into a rather long disquisition. Ihde points to the necessity of a framework or paradigm for understanding. Here I would like to suggest that Grene's preferred framework, philosophical anthropology, nicely complements Ihde's preferred framework, a phenomenological philosophy of technology, and vice-versa. Both frameworks stress a relational ontology but where Ihde tends to focus on our relation to technology, Grene tends to focus on our relation to nature. As she puts it, "Late in the twentieth century, we still need to think through anew the basic principles of our view of nature and of man and especially of the relation between nature and man" (1974: 346). For Grene, this especially means that the human being has to be understood as a part of nature (as she puts it, as a "real, live, breathing, perceiving, exploring *animal*, destined to seek, and find, its way in a real, existent, challenging, but up to a point manageable environment" (1995: 42)). But while Grene recognizes that as human beings we are destined to become the persons we do become in an artifactual, language-mediated world, she pays little attention to the role of technology in that process. Grene points out that culture is dependent on the use of natural materials and that our efforts to find our way in our human environments (including, she notes, such environments as libraries, laboratories, and space ships) are dependent upon language, instruments, and pictorial representations (144). Her account, though, of those artifacts which make up our culture is rather

thin and this is true of many philosophical anthropologists, who either took a critical stance against technology (as in the work of Martin Buber and Hans Jonas) or ignored it altogether (the rare exception being Arnold Gehlen's *Man in the Age of Technology*). Ihde brings to these reflections a much greater awareness of the role of technology in shaping and constituting the human being and this emphasis on human-technology relations is much needed in philosophical anthropology, especially in this period in which the posthuman exercises such fascination, as I will argue below.

Returning to *Postphenomenology: A Critical Companion to Ihde*, now from the paradigm of Grene's philosophical anthropology, it is worth noting that while Ihde, together with his commentators, reminds us that the human being is one part of a human-technology-world relation, there is very little attention paid to just who or what that human being is that enters into the relation, despite the fact that a number of the questions raised in *Postphenomenology: A Critical Companion to Ihde* implicitly or explicitly point to issues about the human being, for instance, Robert Scharff's questions about the relationship between body one and body two in Ihde's phenomenology and Ihde's failure to address issues of gender, race, political and economic power, or spiritual understanding (136). Both of these are points which I think Grene's philosophical anthropology goes some ways toward addressing, as she repeatedly reminds us that perception is always cultural or symbolic and that human beings can only be understood as individuated beings. When Ihde states that "the human with a steel axe is different than the human without one" (1993: 34), he emphasizes the human-technology pairing and goes on to say quite a bit about technology. As right he should. I would like to insist that we ask as much about the human being in that pairing. How is the human being different? What is the range of differences we can comprehend in these technology pairings? What are we as human beings such that we are open to these technological pairings? Are there pairings with technology that risk our being human? Such questions are perhaps called for by Ihde's own insistence on the need for multiple perspectives and the interplay of variations. As he reminds us in *Postphenomenology: Essays in the Postmodern Context*, postphenomenology is a "nonfoundational and nontranscendental phenomenology which makes variational theory its most important methodological strategy" (1993: 7). In *Chasing Technoscience*, he suggests, "You need to have a series of multiple perspectives, to recognize the shape, structure, and complexity of the phenomenon you are investigating" (2003: 125). As a variant on Ihde's human-technology pairing, perhaps we should look at the human being-nature pairing or, from an ethological perspective, the human being--non-human animal pairing. Employing these complimentary frameworks may not only disclose to us something about the human being insofar as he or she is an animal, it might also give us some insight into tool use among animals. It may also lead us to temper somewhat Ihde's claim that "technology supplies the dominant basis for an understanding both of the world and of ourselves" (1983: 10). Perhaps it is better to say that it supplies one of the dominant bases, with nature providing another strong basis.

III Technology

My second pathway into the work of Ihde is more closely connected to concerns in philosophy of technology. Further pursuing an examination of Ihde's corpus from the perspective of concerns central to philosophical anthropology, I would like to suggest that Ihde has paid insufficient attention to the figure of the posthuman, though there are rich resources in his philosophical work for addressing this inattention.

I found my way into philosophy of technology through a growing preoccupation with the posthuman and those technologies that at least some people have suggested are ushering us into what we might think of as a new *stability* (as Ihde seems to use this term in his "Forty Years" (274)), that of the posthuman. Avoiding any potential confusion with posthumanism, I would like to focus more squarely on that host of technologies most often implicated in discussions of the posthuman: genetic engineering, various forms of cybernetic technologies, cosmetic surgery, reproductive technologies and embryonic stem cell technologies, A.I., A.L.,V.R., the whole alphabet of human enhancement technologies. I do not think you can today responsibly do philosophical anthropology without coming to terms with the posthuman and its attendant technologies. This is in fact one of the mild disappointments in reading Ihde's work and the commentaries on it collected in *Postphenomenology: A Critical Companion to Ihde*. While there are many significant resources in Ihde's philosophy of technology for the philosophical anthropologist thinking about the posthuman, Ihde himself has been relatively quiet on precisely those technologies that have most dominated interest in our current climate. Furthermore, *Postphenomenology: A Critical Companion to Ihde* includes relatively little discussion of these technologies or the controversies surrounding the figure of the posthuman. It is there implicitly in discussions of the symmetry problem, but I would have liked to see it more explicitly addressed. Some of the most important moral issues we will likely face in the early decades of this century come at the intersection of philosophical anthropology and philosophy of technology and we have a responsibility to address them. Doing so in the context of Ihde's postphenomenological philosophy of technology would also go some ways, I think, toward addressing the lack of a normative dimension in Ihde's work, a concern voiced by several of the contributors to *Postphenomenonlogy: A Critical Companion to Ihde*.

The importance of this theme is suggested by some of the opening remarks of Ihde's *Postphenomenology: Essays in the Postmodern Context*, where in the introduction to the first part, drawing on Michel Foucault, he points to our hyperawareness of invention: "To invent is to socially construct, often with the implication that anything constructed may equivalently be deconstructed" (Ihde 1993: 13). Ihde connects this thought to what might be the opening gambit in the posthuman: Foucault's now infamous claim that man is a strange rift in the order of things, a recent invention soon to disappear. Referencing a "hyperawareness of our transformability" (Ihde 1993: 13) Ihde asks, "How can we so easily invent, deconstruct, and then reinvent?" We might similarly ask: "How can we so easily be invented, deconstructed, and then reinvented?" But while recognizing that "today we live amidst the posts" (Ihde 1993: 1), the posthuman itself doesn't warrant extended attention in Ihde's postphenomenology. Indeed, it's interesting to note that while Ihde generally seems to strike an optimistic note in his analyses of technology, he does seem rather put off by some of the computer technologies often highlighted by proponents of the posthuman. In *Bodies in Technology*, for instance, he is incredulous about the claim that there are people who desire to be wired to their computers. After reporting that there are *actual* people who desire this, Ihde suggests these "extreme nerds" have either debilitated social skills or disabled-body-related reasons for the desire (2002: xii). Now this seems a rather quick analysis predicated on an uncharitable stereotype of what is a not uncommon "technofantasy" in the posthuman/transhumanist literature. Perhaps recognizing his uncharitable dismissal, Ihde soon adds: "But here I seem to be taking a direction that I do not want to take and that I have not taken in earlier works. Unlike our forefathers in philosophy of technology, I am not a dystopian (nor am I a utopian), so I must move carefully in my thinking about technofantasies" (2002: xiii). I think this is precisely what is called for regarding posthuman technologies, it is just that we do not get enough of it in Ihde or his commentators. There are certainly a number of worthwhile explorations of this subculture that do greater justice to participant interests and concerns: Mark

Dery's *Escape Velocity*, Allucquere Rosanne Stone's *The War of Desire and Technology at the Close of the Mechanical Age*, Sherry Turkle's work, and there are more perceptive and charitable analyses of the hacker subculture offered by Steven Levy, Katie Hafner, and Bruce Sterling, among others. Perhaps Ihde's stance towards these technologies parallels his response to video games. As he writes about his adolescent son playing video games: "I watch him play at his request, and with boredom I wonder how he can be so enchanted when the varieties of chase-and-kill are simply those of being a warrior with a sword or, in a new graphic, a soldier with a machine-pistol, or a science-fiction hero with a phaser" (2002: 81). While *Bodies in Technology* is part of the "Electronic Mediations" series, the book focuses relatively little attention on electronic mediations and seems more at home with telescopes and the camera obscura than cyberspace and cyborgs.

Now this is mostly a quibble for, as I suggested, I think there are important resources for thinking about the posthuman in Ihde's work, many of which are apparent in *Postphenomenology: A Critical Companion to Ihde*. Very briefly, allow me to mention two that I think are directly relevant to debates over the posthuman.

First, as several of the contributors to *Postphenomenology: A Critical Companion to Ihde* note, including Mitcham, Selinger, and Scharff, a key component of Ihde's philosophy of technology is his commitment to the claim that technology is not something alien imposed on our naturalness, as Scharff puts it in his contribution (133). Drawing on a central image from Ihde's *Technology and the Lifeworld*, Mitcham concurs: "Human beings are not able to lead nontechnological lives in some garden state, because on the Earth they are inherently technological organisms" (30). This is an important insight and one that still has to be insisted on today, even in the midst of our exceptionally high-tech lives. This insight is the kernel for many of Ihde's other important recognitions about technology, including its non-neutrality and the need to avoid utopian or dystopian analyses. And it is precisely this insight that helps us see the weaknesses in conservative critics of the posthuman, such as Leon Kass, Francis Fukuyama, and Bill McKibben, who often seem to look to a view of the human free of the negative implications of technology. Kass' critique of biotechnology, for instance, is often founded on heeding the wisdom in the mystery of nature (2002: 157) and recognizing and preserving an unalterable human nature as a standard or norm of what is good (2002: 132). Kass articulates a view premised upon a view of human nature untouched by technology, a view directly at odds with and undermined by Ihde's recognition that we are, as Mitchum puts it above, inherently technological organisms. While I do not have the space to develop it here, it is interesting to note the very different conclusions Ihde (1990) and Kass (2206) take away from a reflection on Genesis and Adam.

Second, I would like to point to the usefulness of Ihde's thoughts on the role of amplification and reduction in assessing technologies. This is a theme that Paul Thompson touches on in his contribution to the volume: "Amplification and reduction indicate the way that using a particular technology creates an implicit focus, a form of selective attention. Although the applicability of these ideas to problems in technological ethics should be obvious, few have utilized Ihde's theoretical apparatus for the purpose of ethical analysis" (116). Ihde reminds us that "with every amplification, there is a simultaneous and necessary reduction. And…the amplification tends to stand out, to be dramatic, while the reduction tends to be overlooked" (1979: 21). This is no where more true than in the technologies of the posthuman. Whether focused on the extreme claims of the Extropians and the transhumanists, or the somewhat milder claims of the cosmetic surgery industry, we hear a lot about how technology is going to help us reach our full potential, amplify our best traits, help us become all we want to be. Our focus is directed on all the positive,

amplifying powers of the technology and it is this selective attention that the most insightful critics of posthuman technologies address. Indeed, I think Thompson overstates his point when he suggests that few have utilized Ihde's theoretical apparatus. Explicitly this may be the case, but I think if we take a volume such as Eric Parens' *Enhancing Human Traits*, we can see Ihde's insight very much at work. Margaret Little's essay, for instance, on "Cosmetic Surgery, Suspect Norms, and the Ethics of Complicity," does a terrific job bringing out the complexity of the situation faced by the surgeon who wants to address a patient's pain but is also aware of being complicit in enforcing suspect norms of appearance. Little recognizes that requests for cosmetic surgery are often motivated by deep and genuine suffering in which surgery is pursued from a desire to end a distressing sense of alienation from some body part or to escape teasing. But her analysis brings out how this distress is parasitic on some value or aesthetic norm the surgery is complicit in upholding. Her analysis, together with essays by Carol Freedman, Ronald Cole Turner, and Carl Elliot, among others, exemplify Ihde's observations about the amplifying and reducing powers of technology and serve to undermine the simplistic claims made by proponents of the posthuman such as Gregory Stock, Nicholas Agar, Nick Bostrom, and others.

Ihde's work, then, provides important resources for engaging with the issue of the posthuman, resources that I think do have some real normative bite, at least insofar as they indicate paths we ought to be wary of. There remains, though, one troubling sticking point, to which I turn in the final section of this essay.

IV World

While Ihde's postphenomenology provides important resources for critically approaching the posthuman, it also in one important respect seems to be closely aligned to it. In this section, I briefly examine Ihde's account of the pluriculture and its attendant form of subjectivity and suggest that it raises serious questions for the human being living in the contemporary world.

One commonly noted feature of the posthuman is the focus on decentered or fragmented subjectivity, a feature often derived from drawing close parallels between distributed processing in A.I. and the workings of the brain and from noting the manner in which the world we 21st century human beings live in is a media saturated environment characterized by multiple, fragmented perspectives. The impact of technology on subjectivity has in fact received a great deal of attention, at least since the time of Marshall McLuhan and his compatriots in the so-called Toronto school (including Ong and Havelock). More recently, in the work of communication theorists such as Mark Poster and social psychologists such as Kenneth Gergen (see especially his *The Saturated Self* for a close parallel to Ihde's account of the pluriculture), in Turkle's and Stone's analysis of the internet culture, in Katherine Hayles' account of distributed subjectivity in *How We Became Posthuman*, we're witnessing a celebration of the multiple, fragmented, distributed self and the role of technology in shaping that subjectivity. We see a parallel in Ihde's account of the pluriculture, a topic that while it received too little attention in *Postphenomenology: A Critical Companion to Ihde*, was explicitly addressed in Selinger's contribution. Like these other theorists I have mentioned, Ihde foregrounds the way in which image technologies are reshaping culture, creating a postmodern pluricultural compound vision which has an acidic effect on more foundational and romantic visions of culture. "Compound vision is multiple vision. One scans the multiple screens, focusing here, then there and, out of the mélange, forming new directions and possibilities" (1993: 29). Like Gergen, Turkle, Poster, and others, Ihde seems genuinely optimistic about this postmodern pluriculture and seems to celebrate

this multiple or compound vision. The world as remade by image technologies is one to embrace. Here I think we should be more hesitant. Are we meant for a world made up of the bits and pieces and flotsam and jetsam from the Others of whom we are now aware (1993: 28)? Can we human beings long survive in an acidic environment? There are a number of reasons to be wary of Ihde's claims regarding image technologies and the pluriculture. First, I think these accounts are overly indebted to technological metaphors and place too much emphasis on technology as the engine driving subjectivity. Ihde's account of image technologies and epistemological engines seems to place the technology in the driver's seat, suggesting an overly deterministic metaphor. Secondly, it is easier said than done when moving from centered to decentered subjectivity. Consider Ihde's common analogy for thinking about compound vision, the multiple display screens found in newsrooms.

> Before these compound eyes sits a group of viewers coordinating the separate visions into the mix that will be either the evening news or the rocket launch. Ultimately, a pattern and selection occurs, but it is formed out of the multiplicity of individual screens. Risking what I know is bound to be criticized, the compound eye has the advantages of those same eyes in insects; it gives a panorama beyond the boundaries of even the binocular. (1990: 174)

But are insect eyes appropriate for human beings? As Grene notes in her *Philosophical Testament*: "Insects find themselves in a visual world structured on principles wholly different from ours. And what they do with their visual information, given the difference in their nervous apparatus, has got to be different, too" (1995: 155). Biology may play a constitutive role in shaping our perception that calls into question the advantages of the compound eye. And let us not forget that in the typical newsroom, there is usually a newsroom director who is finally responsible for the mix that gets broadcast on the nightly news. Ihde suggests that "we are all in the process of 'editing' or constructing our lives as in the newsroom image" (1993: 64) and that "one scans the multiple screens, focusing here, then there…" (1993: 29). Who is this one, this we that is doing the editing and selecting the focus? Third, continuing with this newsroom metaphor, we might recall that recently while Bush was attending the G-8 summit in Germany, the news was dominated by that other great story of the day, the Paris Hilton affair: will she go to jail or not? Ihde is optimistic that the pluriculture will lead to the questioning of Eurocentrism and the flowering of tolerance (1993: 55). Is this optimism warranted? Afterall, the pluricultre could just as likely lead to all Paris, all the time and I'm not sure we're given any reason to think we'll get the better part of the deal. Indeed, the Pew Research Center recently reported that despite living in the information age, Americans are no better informed today than they were twenty years ago. Ihde's own reticence regarding predictions and prognosis further militate against his optimism regarding the pluriculture and compound vision. Furthermore, any number of analyses of the future of the media and online communities emphasize the narrowcasting of information and the construction of self-selected, homogenous online populations. None of this bodes well for optimism regarding the pluriculture. Fourth, while Ihde recognizes that a kind of bricolage relativism is implicit in pluriculture ("one may pick and choose culture fragments, multiple choices, and in the process reflectively find one's own standards provincial or arbitrary" (qtd. by Selinger, 102)), I am lead to recall Robert Jay Lifton's reflections in *The Nazi Doctors: Medical Killing and the Psychology of Genocide* on the psychological process of doubling in which Nazi doctors could be both healers and perpetrators of genocide. What is to determine the outcome of multiple, compound vision? While Ihde suggests that tolerance and a greater willingness to question our Eurocentrism will result from the pluriculture and compound vision, Lifton's account suggests a more troubling and ethically questionable outcome.

Finally, coming full circle, we might return to philosophical anthropology. I began by pointing out the need to think together philosophy of technology and philosophical anthropology. Returning one last time to Marjorie Grene, in the final chapter of her philosophical testament, she raises the question: "As natural beings made what, or who, we are by the givens of a culture, how does each of us, as a responsible person, cope with the world around us, including, of course, our peers of the human world?" (1995: 174). She argues that we do so by acting out of a center: "To be a person, in the sense in which we human beings consider ourselves persons, is to be the center of actions, in such a way that we are accountable for what we do" (1995: 176). Being a center of action is in fact I think important for many life forms and operating under something like an ordering principle is probably essential to our human way of being. It is certainly essential I think to the process of raising children and anyone who has observed either human beings or animals laboring under the burden of fragmentation, it is not a comfortable sight. As Jane Flax observes, "Those who celebrate or call for a 'decentered' self seem self-deceptively naïve and unaware of the basic cohesion within themselves that makes the fragmentation of experiences something other than a terrifying slide into psychosis" (1990: 218-19). As we consider this world, then, of which we human beings and our technologies are a part, let us keep in mind that the world in which we must live must be a human world. In thinking about human-technology-world relations, let us give equal time to each element in this relational triangle.

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Normative Judgment and Technoscience: Nudging Ihde, Again

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Abstract
This essay interrogates the relation between descriptive and prescriptive elements in Don Ihde's philosophy of technology. I argue that while Ihde's philosophy contributes more to normative inquiry than is often acknowledged, it may be insufficient for addressing core issues concerning cosmopolitanism, ecological catastrophe, and animal rights.

Key Words: Globalization, Ihde, Postphenomenology

Introduction

Before *Postphenomenology: A Critical Companion to Ihde* was published, Don Ihde had been accused of prioritizing the descriptive aspects of phenomenology in his philosophy of technology to the detriment of developing a critical approach to assessing the emerging moral and political issues that accompany technological innovation. To use a distinction made by Carl Mitcham, this line of critique depicts Ihde as an "engineering" but not "humanities" philosopher of technology. Ihde is said to unravel the complexities of technological mediation at the expense of advancing substantive claims about the proper role that technology should play in the good life, morally understood, or within democracy, conceived of in at least one of its political modes. In short, while Ihde is acknowledged to be a leading principal in the American Philosophy of Technology, the consensus is that Albert Borgmann's philosophy is the main source of moral insights into technology, while Andrew Feenberg's critical theory of technology is the main source of political interrogation.

Variations of this position continue to be articulated in *Postphenomenology: A Critical Companion to Ihde*. Robert Scharff, Paul Thompson, and Mitcham himself each raise provocative questions about Ihde's treatment of normative matters. Scharff claims that Ihde's descriptions can seem "strangely apolitical and 'neutral'" (131). Thompson laments that "neither Ihde nor his students have articulated or developed some of the most obvious and important extensions of his thought in the normative realm" (116). And Mitcham questions how deeply Ihde's philosophy overlaps with American pragmatism: "Ihde's interest in social-cultural reform has been less than what is typical of classical pragmatism, at least as exemplified by Dewey and promoted again by Durbin and Hickman" (31).

In my contribution to *Postphenomenology: A Critical Companion to Ihde*, I departed by from the Ihde-is-not-sufficiently-normative bandwagon by arguing that he in fact does make significant contribution to normative theory (89-107). As I see it, Ihde makes these contributions by providing deflationary accounts of untenable utopian and dystopian depictions of technoscientific practice. Such accounts are normatively relevant because they expose a dominant "cheat code" that hinders the narratives provided by many heavy-handed normative analysts. In their narratives, fictitious descriptions of non-existent technoscientific maladies are misrepresented as being empirically and/or ontologically real.

This defense of Ihde's contributions to normative theory did not entail a complete exoneration of his philosophy from all relevant charges. Contrarily, I ended my chapter by raising critical questions about Ihde's approach to non-foundational philosophy and cosmopolitanism (103-105). These questions remain, and I will revisit the main themes by posing two challenges here.

First Challenge: Cosmopolitanism

The first challenge addresses a number of interrelated issues concerning Ihde's commitment to cosmopolitanism. For Ihde, cosmopolitanism amounts to viewing globalization from the inclusive perspective of "pluriculture," a perspective that treats diversity as a praiseworthy good. Since there are many ways to favor diversity, what makes Ihde's ideal vision of the global world distinct is that it is an unapologetically postmodern outlook. When Ihde articulates the type of world he would like to live in, enthusiasm is expressed for one in which diverse practices are permitted to flourish through hybridization. In this world, one pastiche forms after another, as old and new practices collide, reconfigure, and give rise to novel possibilities for living.

But what justifies Ihde's commitment to this particular vision of cosmopolitanism and diversity? As a non-foundationalist, he cannot justify diversity as a cross-cultural good by appealing to intrinsic worth. Nor can he take a utilitarian perspective and appeal to a connection between diversity and widespread pleasure. A virtue ethics stance, in which diversity is treated as a cross-cultural good that enhances the moral character of citizens is similarly off limits, as is an appeal to evolutionary ethics, according to which some link would be established between diversity and species egoism. And what about those traditionalists, particularly the so-called fundamentalists, who deeply oppose the type of world that Ihde is attracted to? On what philosophical grounds can their worldviews be contested?

Beyond these issues, Ihde does not comment on whether limits should be imposed on how much diversity ought to be allowed to arise in a global context. Does this reticence imply a shared commitment with Deleuze-inspired theorists who privilege the category of "becoming" and praise the ways in which a "dance of agency" allows for ever new human-machine assemblages to emerge? Not only might this issue re-orient the debate in *Postphenomenology: A Critical Companion to Ihde* between Ihde and Andrew Pickering, but it also has direct implications for theorists and practitioners who are working on issues related to technology and cultural preservation (211-218, 275-276). For example, does Ihde's philosophy imply that it is a mistake to rebuild such decimated cities New Orleans, preserve decaying artworks and architectural structures, or repatriate artifacts that historically were coercively removed from a region? If so, why? If not, why not? Similarly, how does Ihde feel about instances in which technologies are used to violate human rights (e.g., cluster munitions), or patterns of development in which advances in technology deskill populations that, in turn, sink deeper into poverty? Are there any philosophical approaches to human rights and distributive justice that he endorses? Again, if so, which ones, and if none, why?

Finally, Ihde typically expresses his praise for diversity in conjunction with presenting personal reflections on traveling around the world. Clearly, Ihde has derived immense aesthetic satisfaction from experiencing worldly cuisines, rituals, and artifacts. More than this, he credits travel with improving the quality of his philosophy. As reiterated in *Postphenomenology: A Critical Companion to Ihde*, a conference in Colombia, South America led him to think about multiculturalism and identity in a new and putatively better way (6). Beyond these subjective

rewards, one gets the impression that Ihde would like to make more substantive general claims, but refrains from doing so because of his aversion to foundational philosophy. For example, does Ihde think that it is possible to be a good philosopher of technology if one lacks direct experience in worldly travel? Can reading texts about other cultures, or having extensive dialogue with either members of other cultures or theorists who study other cultures, suffice to provide an education into phenomenological variation? Or, is it necessary to have a certain amount of direct experience in how other cultures organize their styles of engagement?

More broadly, might the issue of travel be a topic that unites Borgmann and Ihde in ways that have yet to be sufficiently explored? Borgmann gives us a clear sense of what our lives would lack, were we to live without focal practices, or were we to give them insufficient priority. Doesn't Ihde also want to suggest that a life bereft of travel is a life that is missing something essential? And, how does Ihde view his contingent relation to travel, one in which he moves about as a highly educated and financially secure American who often has clear and direct ties to a given host country, with the potentially more general views that he may wish to endorse? By addressing these issues, Ihde will clarify further what he views the "empirical turn" in philosophy to entail. That is, he will clarify which forms of mediated experience can yield appropriate insight into the empirically observable activity occurring in a given domain.

Second Challenge: The Threshold Problem

The second challenge to Ihde concerns what I am calling the *threshold problem*. This problem pertains to two types of restrictive contexts: (1) contexts in which it is undesirable to look for multi-stable possibilities, and (2) contexts that drastically curtail opportunities for multi-stable potentials to be reached. In order to explore this issue, it will be useful to proceed with a few remarks on non-neutrality.

With respect to the *praxis* particular to technological mediation, Ihde has long emphasized that the distinct character of technology is non-neutrality. In an interview for *5 Questions: Philosophy of Technology* (2007), Ihde was asked: "What, if any, practical and/or social-political obligations follow from studying technology from a philosophical perspective?" His reply emphasizes the connection between invention and normative consequences: "One important realization that emerges from the philosophical reflection upon technologies…is that all technologies are non-neutral….This means, minimally, that any invention will have some social and political consequence" (109).

As the multi-stable phenomenologist par excellence, Ihde can see variational possibilities in the non-neutral outcomes that technoscientific invention and practices facilitate in cases where others see only one-sided options and predictable conclusions. In *Postphenomenology: A Critical Companion to Ihde* Borgmann notes that Ihde takes "pleasure" in disclosing the "riches of multistability," and suggests that this capacity to find novelty where others find the eclipse of meaning may in fact reflect "Ihde's sunny disposition" (252). Regardless of how much weight should be attributed to personal affect, the fact remains that Ihde does depict critics who view technology as essentially threatening as observers who suffer from perceptual difficulties.

The price to pay for having such a high threshold for ambiguity is that *nothing appears catastrophic and dire* to Ihde. Indeed, the *praxis correlate to Ihde's generous affirmation of ambiguity is a pragmatic commitment to muddling through*. Radical activism that is guided by a sense of existing or impending disaster is not seen as necessary. Ihde's ethos thus seems to be the

following. Since technology has been non-neutral since its very beginnings, and since the human species remains intact despite recurring laments of crisis, there is, more or less, no justification for worrying more about technology than our ancestors did. They "persevered," and so too shall we, even if such persistence involves ineliminable change.

Bill McKibben espouses a contrary ethos. He insists that while it can be very hard to grasp the existence of profound alterations that have the potential to change what it means, fundamentally, to be human and to lead a human life, there nevertheless are instances in which "discontinuous, sudden, and enormous" transformations occur that do, in fact, have such potential, and which, thereby, pose threshold problems. With respect to the problem of global warming, in *5 Questions: Philosophy of Technology* (2007) McKibben offers the possibility that "we might be standing on a strange moment in human history, right on a threshold" (138). Unfortunately, he contends, many people shy away from this awareness and organize their commitments around distortions: "Even if we, say, believe in global warming we think that it must be somewhat distant, happening fairly slowly; this distortion, probably due to our evolved mechanisms for assessing risk, makes our reactions slow and limp" (ibid., 137). Given the poor environmental policies that the Bush Administration has promoted, it is hard to disagree with McKibben's sense that it may very well prove to be more beneficial to accept dystopian predictions about global warming as viable hypotheses than it is to deflate them through the openness that Ihde-style variation permits. Where, then, does Ihde stand on the use of foundational appeals to dire scientific predictions about environmental futures as a means of reorienting public policy?

The threshold problem extends beyond global warming and issues of human identity to technological practices that take place in environments that are so restrictive that non-human identities become radically changed. Consider, for example, the new book by Peter Singer and Jim Mason, *The Way We Eat* (2006). Singer and Mason contend that eating is a moral activity because the food humans consume is prepared through practices that impact how animals, the environment, and other human beings are treated. In this context, the authors provide a rich examination of farming and fishing in order to show that a gap exists between what typical consumers imagine occurs with these activities and what actually occurs as a result of specific technological procedures. Within the context of these procedures, we are confronted with the primary concerns that Heidegger had about the essence of technology. The animals embedded in factory farming systems are treated like "standing reserve"; no aspect of their lives escapes from efficiency-oriented technological intrusion. Indeed, Heidegger may have been incredibly insensitive to equate factory farming with the Holocaust, but, as Singer and Mason show, Heidegger choose well in selecting factory farming as a paradigm case of closed-system, technological management. No amount of multi-stable gazing at a modern factory farm will enable what passes for chickens to resume living as real chickens.

Reflecting on such cases as factory farming remind us that technological multistability can only arise if several conditions are met. First, an artifact's material must be flexible enough that it can be inserted into different practices. Second, a practice needs to permit some freedom for novel use in order for an artifact to be used in a novel way. Third, the human agents who use materially flexible artifacts in practices that permit some degrees of freedom need to have the physical capability to use artifacts in new ways. Fourth, there must be sufficient time for human agents to use artifacts in novel ways. By reflecting on these conditions, we can discern the underlying biases that structure Ihde's depictions of multistability.

Ihde's discussions of multistability arise in two main contexts. Sometimes, Ihde simply performs an abstract perceptual exercise. The main example in his work is the recurring case of showing how the famous ambiguous image of a duck-rabbit can be extended to include other possibilities, including a Martian and squid. Exercises like this take great liberties with the issues of embeddedness and temporality. Ihde has all the time in the world to come up with as many variations as he possibly can. Moreover, he goes to work on an innocent example, one that is not fraught with tensions between morality, politics, and economy. No business, politician, or special interest group will feel threatened by Ihde's act of perceptually varying an image that nobody owns and which fails to incite radical action.

In other instances, Ihde draws from the histories of science and technology to show how over time artifacts come to be used in ways that differ dramatically from the intentions held by the original designers. For example, we are reminded that sonograms are not morally neutral. Sometimes, they are used as tools for determining whether or not an abortion should occur. Again, by selecting examples of technologies that transform over time, Ihde takes liberties. Over the *longue durée*, how surprising is it that all manner of devices and their contexts of use change?

Ultimately, the problem that factory farming poses for Ihde is that it is an example which, when looked at in the short-term, can best be understood as a closed techno-economic system that permits few, if any, degrees of freedom for alteration. In the short term, multi-stable perceptions of factory farming are abstract projections of possibilities that may or may not arise in an uncertain future. Given such austerity, and the compelling points that Singer and Mason make about pain and suffering, what is wrong with taking a foundational approach to judging factory farming to be an illicit practice, at least in the short term? This judgment can be made without endorsing Singer's version of preference utilitarianism in any other contexts. Similarly, it may be advantageous to endorse a dystopian view on global warming, at least in the present. This judgment can be made without validating any of the other dystopian analyses of technoscience that Ihde rightly finds problematic.

Conclusion

Despite Ihde's willingness to endorse disciplinary overlaps as well as conceptual and ontological hybrids that others find unacceptable (e.g., technoscience, pluricultural, multistability, expanded hermeneutics, etc.), he remains somewhat of a purist in maintaining a staunch nonfoundational position on normativity. The questions which I have raised suggest that it may be possible for Ihde to be more flexible on this matter. In the spirit of "strategic essentialism," he may be able to advance foundational positions on some forms of technoscientific practice and some aspects of cosmopolitan living, without accepting any particular moral or political doctrine as the general prism through which he views all instances of innovation and non-neutral, technologically mediated action, cognition, and perception.

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The *Corpus* Is Not Yet Closed…

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I will begin my response to this impressive set of responses and criticisms to my 'Ihdeology,' by expressing my extreme gratitude to Evan Selinger, who conceived of the 'critical companion' called *Postphenomenology,* brought it into being with its list of eminent scholars from a multiplicity of fields. The contributors from philosophy of technology, philosophy of science, science studies and other disciplines as diverse as musicology and sociology, are among the most distinguished authors one can imagine. Since some of them are my former students, a few are colleagues, but most are peers in the relevant fields, it is with a sense of pride that I feel this gratitude. Perhaps it is only with someone like Selinger that this result could happen—he is persistent and productive in his own right. Today he is already one of the most obvious new visionaries in the philosophy of technology or technoscience studies. Since *Postphenomenology,* he has edited (with Jan Kyre-Berg Olesen) *Five Questions in the Philosophy of Technology (2006),* this time with 24 scholars who delivered, and the forthcoming *New Waves in the Philosophy of Technology (2008).* I could go on listing his earlier and forthcoming works as well, *but* –especially since several of the papers urge me to recognize the 'darker' sides of things —I will respond to precisely the darker side of this critical companion.

When Selinger was developing the book, he was still a Ph.D. student at Stony Brook and he would occasionally come in to update me on progress. Although he didn't see me doing this, I would occasionally look at some of my piled up books on the shelf behind him which also included some of the Cambridge companions—to Gadamer, Husserl, and others. I realized that these companions were all companions to *'dead white males'*! Indeed, Habermas was the only other living philosopher in that companion series! Furthermore, precisely because of this status, the written *corpus* of each was *closed.* So, I had found the source of my slight feeling of unease, as if a critical companion provoked some sense of being an epitaph. This feeling was not helped by my most recent contribution to the Selinger *corpus,* a special issue of *Phenomenology and the Cognitive Sciences* on cyborg bodies—my contribution is titled: "Aging: I don't want to be a Cyborg."

Now, in contrast to gratitude, I also have to enter a protest in my response—the *corpus* is not closed, nor complete. And, in part precisely because of a growing cyborg hybridization process which helps maintain my aging body as described in the forementioned article, I fully expect to significantly expand the Ihde publication *corpus* for some time to come! So, on to the task of response:

In design, this panel is supposedly a response to *Postphenomenology: A Critical Companion to Ihde,* yet, except for Selinger, the panelists are all respondents not themselves in the book and none take on the book-as-a whole for this occasion. Perhaps this is an example of my notion of the 'designer fallacy' in which an outcome is rarely isomorphic with its originating 'intention'?

And, while I cannot know which respondents have both read the entire companion, let alone my full *corpus* of works my discussion will have to address the essays as given. (I suspect only Selinger comes close to full acquaintance with the *corpus.* And even he, until the process was

well along, was not very familiar with my earlier work on auditory experience which receives considerable attention in *Postphenomenology*.) This panel, instead, brings new issues to consider in the development of postphenomenology.

Actually, in this case, the unintended consequences turn out to be highly beneficial. Each critic has latched onto what could be taken as some underdeveloped strand of my work, and elaborates this into a complementary trajectory to which I can now respond. Posthumanism, pragmatism, Marxian thought, and normativity are the four themes which are brought to this discussion. And, I shall try to respond to each, but I will begin with what I call the "Al Lingis" gambit. Al Lingis once noted to me—and I have seen him in action doing this—that his first take upon critics is to plead guilty! And so, he will say "I am even more guilty than you think I am…." So, in this case, yes, I am not a foundationalist, particularly in ethics and political philosophy and am unlikely to become one; no, I have not launched a reform movement for either technologies or politics; nor am I an espouser of posthumanism in its most radical senses; and yes, I reject the deterministic and later pessimistic tones of much classical Marxism. And, I also plead guilty to having more philosophical interest in the production of scientific knowledge and epistemology than in battles between utilitarians and deontologists; and I hold descriptive work must be careful and highly developed, before going on to drawing normative conclusions; and, contrary to Paul Durbin's chastisements concerning my lack of engagement in so many of the past SPT concerns—take 'appropriate technologies' as an example—because I thought these misguided at the time, and now I think we can see better how and why this movement was misguided, and so on.

That said—and I doubt that this will surprise my readers—I do think the industrial model of factory farming is despicable, and indeed the old 'rust belt' industrial technologies even deserve their Heideggerian critique; and I am very, very concerned about the retrograde rejections of multiculturalism in the form of the various fundamentalisms-cum-terrorisms now rampant; and I could even be called 'nostalgic' for good old fashioned civil liberties; and, above all—though anyone who has read *Technology and the Lifeworld (1990),* should know that I take concern for the environment as a major issue for the postmodern world.

Is this stubbornness? Or simply sclerotized categorization and habit? I shall try to convince you to the contrary, but I shall do this somewhat indirectly by turning to new and as yet little published aspects of the still open *corpus.*

In my typical style, I will begin anecdotally: Some years ago at a book exhibit at SPEP, SUNY Press had a collection of my works on their table. They had just re-issued *Experimental Phenomenology* (1986) which lay alongside *Existential Technics (1983)* and *Consequences of Phenomenology (1986).* Several persons noted this sampling and one spoke up—pointing to *Experimental Phenomenology*—"That's 'early' Ihde!' I was amused, and sort of wondered what 'late' Ihde might be? Such a periodization, however, has some justification precisely because this event was also uttered just when I was beginning to modify my adaptation of doing phenomenology. Not there on the table, was the simultaneously issued monograph from the *phenomenography* group in Goteborg, Sweden, titled, *Non-Foundational Phenomenology (1986).* That monograph contained considerable reference to Richard Rorty and his then popular descriptions of non-foundationalism, and this was also part of my own response to his pragmatism in *Consequences of Phenomenology* which was lying on the table. Later, of course, I changed this to *postphenomenology,* as in *Postphenomenology: Essays in the Postmodern Context (1993)* and in today's companion.

Purists do not like this and I get lots of flak from them. My own response is that every scholar of phenomenology recognizes variants: 'transcendental,' 'existential,' 'hermeneutic,' phenomenologies—so why not *post* phenomenology? It would be inappropriate to use the bulk of my response time to describe the distinctive features of postphenomenology when I should respond to the critiques in this special issue. So, I will only make passing reference to how the shape of postphenomenology, in my case, emerges with greater explicitness out of the now decade of my *technoscience reseach group.* Put as simply as I can: Even earlier than TRG, I had already been a non-foundationalist and gradually realized that the Deweyan critique of Cartesianism, foundationalism, and even subjectivity, was more effective than classical Husserlian critiques which retained too much of the 'vocabulary' of subject/object, external/internal and the like. But, I also felt that the looser and more generic 'instrumentalism' of pragmatism lacked a certain analytic rigor—which I found and continue to find in the use of *phenomenological variational theory,* which led to my notion of *multistability,* prominent in your critiques. Then, finally, as the distinctive shape of the research seminar took place—reading in science studies, philosophies of science and technology, with feminist subthemes, and reading only living authors—the relevance of 'case studies' began to make an impact. Thus, postphenomenology is pragmatism+phenomenology+the *empirical turn.*

At this juncture, then, I can respond to Hickman's contributions: He, Mitcham and Durbin have been the foremost pragmatist oriented philosophers of technology to recognize my own adaptation of pragmatism. And, I accept virtually all of Hickman's characterizations of how pragmatism operates in postphenomenology. I would make one slight emendation by adding that postphenomenology, while like pragmatism is clearly an *experientialist* philosophy; it is not, like classical phenomenology, 'subjectivist' or either foundationalist or 'relativist '—instead, it has, as Hickman recognizes, a *relationalist ontology.*

Hickman then goes on to join my normative critics and prescribes that I should take a normative turn, a sort of Deweyan reformist turn, in *educational contexts.* Now, continuing my guilty plea---Hickman is right, I do not have an extensive set of *publications* which would constitute an education corpus, I will become a little defensive and point out that these are not entirely lacking, and that behind the scenes or via the applications of others there is an extant education record. The earliest such impact goes back to a much earlier set of relations to Goteborg's Educational University which, borrowing from *Experimental Phenomenology* launched a considerable secondary curriculum unit on 'creative thinking' using the examples of variations developed in that book! Later, *Experimental Phenomenology* was, in fact, translated into Swedish by Daidalos Press which also publishes Habermas, Rorty, et. al. into Swedish. In between, I long served on boards of higher education as a consultant and referee to 'technological literacy' programs in several states. Most recently—in fact two weeks ago—I just returned from a very large conference of technology educators in Scotland, as one of four keynote speakers addressing technological literacy (Andrew Feenberg, Leonard Waks, and Joe Pitt were the others). But, admittedly, articles on this topic, some very recent, are scattered and as with so many of my early works on new topics, appear first in European rather than American journals and books. So, again defensively, my guilt is at least not total.

Similarly, I want to respond to one of Selinger's criticisms also related to my use of variational theory which received its 'early Ihde' treatment in *Experimental Phenomenology.* Selinger refers to a more recent example: my phenomenological expansion of the 'duck-rabbit' into 'duck-rabbit-squid-Martian' variants and criticizes its 'abstract' and disembodied approach. Were I to leave the situation with this abstractness, I could accept such a criticism. Simple, visualist

Gedanken Experimenten are actually very similar to those used by Einstein—who, I remind you, was a contemporary of Husserl. Einstein's variations on seeing relativistically placed railroad trains, one moving in one direction, the other in the opposite, with the momentary illusion of being moved when possibly standing still, also ignores the full-body correction of kinesthesia-tactility in the actual situation. As Merleau-Ponty pointed out, the only solution to a perceptual error is *more and better* perception. Similarly, Einstein's correlation of acceleration and gravity, as in the sudden elevator drop thought experiment, again serves the same kind of purpose I use in my abstract examples. And, while those were used by 'early Ihde,' I later and quite consistently also developed more full-body variations. The extensive descriptive analysis of alternative navigational examples from European and South Pacific forms, fully utilize body positions as variants. [On this score, I think Hickman's point concerning how I could more correctly understand South Pacific navigation as 'instrumental' is well taken.] Most recently, I have been developing two highly full-body examples to complement the quick-insight abstractions with a program to deconstruct the dominant notion that it is 'intuitive' that the earth is experienced as being stable, while the sun is in motion, thus leading to the 'false' notions about motion incorporated in pre-modern physics, and another example of now multistable and multitrajectory of what I call "the seventh machine" which is the bow-under-tension with bow and bowstring. I now hold that this invention, common to virtually all peoples and taken most commonly as a hunting or weaponry 'archery' technology, is as adaptable and multitrajectoried as any of the classical Greek six machines. Archery is only one trajectory, with stringed instruments, drills and fire starters as others. This latest full-body set of multistable variations is just now coming into published form. I will mention in passing that both *Listening and Voice* and *Experimental Phenomenology,* early Ihde 'phenomenologies' are being republished with additional chapters on instruments and technologies added to the earlier texts, adding more embodiment and materiality dimensions to both.

Now, however, it is time to enter into some deeper considerations which arise from the critiques in this special issue:

I begin by combining observations arising from both Weiss and Selinger, relating to what could be called modifications of the human. Weiss chides me for not paying sufficient attention to 'post human' or human modifying technologies: genetic engineering, cybernetics, cosmetic surgery, reproductive technologies and the like. And Selinger recommends the utilitarian-moralist stance of Singer and Mason regarding food, condemning the factory farm, industrial—and Heideggerian 'standing reserve' critique which does not let, now following the same Heideggerian organic romanticism of "what passes for chickens to resume living as real chickens." Now, I could begin with human-modifying technologies and 'real' chickens by appealing to the recognition that ever since humans stopped being hunter-gatherers any 'real' chickens have been modified away from their jungle predecessors many millennia ago. All agriculture, all domestic animal husbandry, long ago moved away from the 'wild.' It is just now, probably in postmodernity, that we are becoming more radically capable of animal and human self-modification. Pre-postmodern modifications often had spiritual, psychological or 'animal' models as guides. Today the more material, technological or biotechnological means have become dominant. But I think it is too early, and the usual tech-hype too intense, to get a sufficient grip upon these techniques. Brain imaging remains a "new phrenology" as the title of an MIT Press book has it; and some body-enhancing is being re-thought: I just read an article on tattoo removal which is becoming popular and users are now calling for the development of less permanent dyes, so that one can more easily erase or re-do tattoos. One of the things I liked about Hickman's paper was his recognition that I could float easily between pre-historic and contemporary examples in a pragmatist-

instrumentalist way-- or a phenomenological variation way, looking for deeper patterns. I do the same here.

It may turn out, in the very deepest sense, that "we are what we eat" in very unexpected ways. As discussed in *Science,* 15 June 2007*,* a magazine which I have read religiously for nearly two decades, anthropologists pose a new theory concerning how we are what we eat: How is it that modern humans, very little physically changed for somewhere between 100-200,000 years BP, developed such large brain cases and brains, compared to our nearest relatives, the apes, or our earlier hominid cousins? The hypothesis discussed is that *cooking,* or what I shall call a culinary technology, may have a large role in this evolution. I am sure you can recall the skull shapes of some of the earliest pre-modern hominids which have a large bone crest running along the top of the skull. These pre-moderns also have large jaws and teeth, particularly in contrast to *homo sapiens sapiens.* Now that crest served functionally as an anchor to the very large muscles which stretched from the top of the skull to the jaw—indicating very powerful bites and chomping activity. The diet, probably with more nuts and tubers, but also raw, torn off slabs of meat, needed grinding and—as the article points out—a much larger portion of the inner body designed as a digestive system. Apes and earlier hominids not only had smaller brains, but also larger proportioned digestive systems, some 30% larger than ours. Cooking and culinary technologies change the environmental conditions for that physiognomy. Cooking 'predigests' as both Ernst Kapp, the earliest philosopher of technology and James Feibleman recognized as a sort of 'external stomach' such technologies provide. Thus cooking provides conditions for smaller teeth, less jaw muscle, smaller digestive tracts--and *expanded* skull capacity as the authors surmise. And, the systematic use of cooking fires are clearly evidenced from early modern humans on. Of course for this development, which had to begin before 200,000 BP, while lacking the specific form of hearths, is also evidenced in some of our pre-modern hominid relatives. Question: what if Mason and Singer do succeed in changing our eating habits; what evolutionary changes will these entail were we to turn vegetarians all, since among other things, high protein diets are costly for increased populations? Might we evolve into more ruminant forms? Back to bigger or multiple stomachs as per ruminants? Here is an Ihde provocation: We also know now that in much earlier pre-modern times, dinosaurs—including Tyrannosaurus Rex, but more recently , a feathered, chicken-shaped dinosaur weighing about a 1000 pounds found in China, both of which are virtually genetically identical to our non-'real' farm chickens. "Genes like a chicken; tastes like a chicken"? So, why not genetically retro-engineer such pre-chickens and there would be no need for packing so many chickens into a factory farm? Only a few would be needed to supply the same number of humans with protein. Does this imply that posthuman technologies could solve the problems of a Heideggerian equation between the Holocaust and modern agriculture? I do not mean to be facetious, but I am suggesting that solutions to our problems are probably going to have to include more and different technologies, rather than rejecting or turning off our technologies. This, again, is pragmatism+phenomenology.

More normativity: must I, as several suggest, including Selinger, become more 'foundationalist' when ethics and politics are considered? No, no 'god' will save us, nor will an absolute. In fact, here with Dewey and not even Husserl, I see no need to go in this direction. 'Relativism' as I understand it, is merely the mirror-image of foundationalism. In relativism, everything goes, all is equal, there is no 'standard' for judgement. Caught in an old fashioned binary, there will be a perpetual, incommensurability to this style of argumentation. But I am not a relativist. Contrarily, a 'relativistic'—or phenomenological variant—position needs only some limited degree of relationality to establish better and worse, or better and less than better solutions. This has been my argument for decades now, and I have frequently used culinary and perceptual examples:

There is no 'best' cuisine, but within any genre of cuisines there are clearly better and worse ones. But the emergence of a *relativistic* scale is also related to experiential *expertise.* My wife and I have now made three trips to four different regions of China, thus gaining in experience both with respect to Chinese food, to the differences between indigenous and exported Chinese cooking, and with respect to regions. And, relativistically—also intersubjectively compared to other travelers' experiences—certain conclusions seem quite robust to me: first, indigenous Chinese cooking is discernibly different from Chinese-American, Chinese-French, or Chinese-German styles of cooking. And we—plus our other intersubjective interlocutors—agree that there is a superior quality to the indigenous form. [I would add to that that I know of no discerning-palate person who would claim that Chinese-German variants are up to any of the other named variants above!] And, so as not to extend this too long, this same intra-genre set of expertises can apply to wine tasting, tea tasting, etc. etc.etc. none of which requires either an absolute scale or a god. This is a culinary physics which is analogous to its Einsteinian form in comparing Newtonian to Einsteinian accuracies. And, just as relativistic physics no longer needs an absolute space or time; neither does a relativistic phenomenology need a foundation nor a god.

This finally brings us to Val Dusek. He rightly recognizes that there is little in my written record and also little in *Postphenomenology* which relates my obviously materiality-sensitive approach to classical Marxism. And, he is correct, that I reject earlier versions of technological determinist, whether in the more optimistic Marx-Lenin forms, or the later more pessimistic Critical Theory forms. Now, while I have frequently mentioned both Ernst Kapp and Karl Marx as 19th century neo-Hegelian predecessors to philosophy of technology, I have not extensively commented upon any 19th century—or for that matter much on the Heideggerians' discussions of Aristotle's *techne.* Both, to my mind, belong to something like abandoned *epistemes* in the Foucault sense. So, instead, he pulls an end run on me in the work of Edgar Zilsel, a 20th century Marxist also associated with the Vienna Circle. I admit that I had never heard of Zilsel or Zilsel's theses prior to my printing out of Dusek's response in the middle of last week! Ouch! So, with the desperation of a typical contemporary, I quickly turned to the internet, including Wikipedia, to find out about him. And, while I am not up to speed, I am clearly going to be sympathetic to his position as I understand it so far—even though he is closer to a social constructionist position than am I. Zilsel argues, somewhat like Lynn White Jr. and the Weberians, that capitalism and a more egalitarian society are needed for the emergence of early modern science, but also that early modernity produces a fusion of the work of craftspeople with text-oriented intellectuals. And, he places this movement earlier than the 17th century, in the Renaissance. Here the "aha" phenomenon strikes home. I, too, make the same point, but in a more instrument centered, material way: In much recent work, but also much earlier in my "The Historical and Ontological Priority of Technology over Science" (1983), I have argued that the Renaissance was a period of time, in which instrumentation proliferated in *both* the arts and early modern science's beginnings. Music became more instrumental than earlier *a capella* sacred chanting; optical instruments became tools both for artists and later for science practicioners; and all this followed the big-machine revolution of the late Middle Ages which Lynn White Jr. points up. In my handout concerning the still open *corpus,* I list some of these very recently published or still forcoming works: 'Did the *camera obscura* invent early Modern Science?," first presented at SPEP, 2002, now published in *Mediated Vision,* edited by P. Kockelkoren (ArtEZ Press, 2007) "Die Kunst kommt der Wissenschaft zuvor: Oder: Provozierte die Camera Obscura de Entwicklung der modernen Wissenshaft?" published the previous year in *Insstrumente in Kunst und Wissenschaft* (2006), out of a five year project on instrumentation in art and science at the Free University of Berlin in which I have been participating. But, I also go farther, I think, than Zilsel in that the instrumentation of science practice to produce more robust and accurate

knowledge, also may be detected in the Hellenic Greek—not Classical Greek—period of the 2nd C. BCE. Erastosthenes' measurements of Earth, the famous calculator now interpreted as a refined machine showing solar universe measurements, all come from this post-Classical—and highly *multicultural* era. Similarly, in the short period *before* the unwise Spaniards closed off the Moors and Jews in 1492, the whole school of Henry the Navigator was producing high quality maps, mathematical navigational calculations, and navigational instruments, contributions Christians, Moors and Jews working together. So, yes, social conditions—I emphasize multicultural exchange—and material instrumentation may well stimulate science. So, I end with my promise to read some more Zilsel.