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FINAL DRAFT - NOT FOR CIRCULATION

STEVE KEIRL

**IHDE'S PRAXIS PHILOSOPHIES AND DESIGN
AND TECHNOLOGY EDUCATION**

INTRODUCTION

Don Ihde, now in his seventh decade of academic life as teacher, philosopher and writer received his BA in 1956, M.Divinity in 1959, and PhD in 1964. Max van Manen references Ihde as a phenomenological philosopher in no lesser company than Husserl, Scheler, Sartre, Levinas, Foucault and Ricoeur (van Manen, 1990:181). In his comprehensive overview of philosophy of technology, Carl Mitcham documents Ihde as the author of the first monograph on philosophy of technology in the English language (*Technics and Praxis*) and as someone who has '...produced the most extensive corpus devoted to the subject.' (Mitcham, 1994:78). Albert Borgmann describes Ihde as '...among the most interesting and provocative contemporary American philosophers. His investigations of how we make sense of reality by means of technology are original and illuminating. He writes with flair and wit.' (Borgman, 2002). More recently, introducing a new (fourth) generation of phenomenological philosophers of technology, Ihde locates himself as third generation which Achterhuis (1999/2001) had described as '...less dystopian, more pragmatic, pro-democratic, and above all each had taken an "empirical turn" or a turn to the analyses of concrete technologies.' (Ihde, 2009a:x)

Martin Heidegger, one of the 20th Century's most influential thinkers radically refocussed attention on technology and how our lives and perceptions are shaped by it and Ihde's work grew directly out of his reflections on Heidegger. As Cohen & Wartofsky (1979) say, Ihde, like Heidegger, '...puts technology in the middle of

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things...’. Also after Heidegger, as we will see, Ihde has worked to distance any philosophy of technology *away from* orthodox philosophical models or interpretations. However, there is a sombre codicil to appreciate regarding Heidegger whose role in relation to National Socialism in Germany from the 1930s remains controversial. Ihde, I believe, cares deeply about the matter, at times talking of Heidegger’s long or dark shadow and of his ‘ghost’ still present (Ihde, 2009a:xi). *Care* is central to Ihde’s work.

Given Ihde’s prodigious output and wide contributions to philosophy of technology I have been necessarily selective in which work to use and which approach to take. Forty years after *Technics and Praxis* not only does Ihde’s work have something special to say but its resistance to orthodoxies and its creative influences remain both timely and vibrant.

PHILOSOPHICAL CONTEXT TO IHDE

For many decades a broad distinction has been made between ‘analytic’ (sometimes ‘Anglo-American’) and ‘Continental’ philosophy. While the distinction is problematic today (see e.g. Critchley, 2001) it can help us understand both Ihde’s philosophy and the ways his work can apply to Design and Technology Education. Other distinctions occur too; for example, Mitcham’s (1994) juxtaposition of an ‘engineering philosophy of technology’ with a ‘humanities philosophy of technology’; and, Snow’s (1959/1993) thesis on the cultural communication gulf between ‘the arts’ and ‘the sciences’.

Broadly, the analytic ‘family’ of philosophies might embrace: explanation of the world through natural science; valuing theory over practice; analysing using logic to test propositions and concepts; precise use of language; and, using prescription; while the continental family seeks to: describe the world as it is humanly experienced; is praxis-focussed - on doing and action-in-the-world; and, maintains human agency as a key interest. Within and across such contrasts are familiar philosophical dualisms: mind-body; subject-object; materialism-idealism; theory-practice; and so on. While we might expect to find philosophy of technology in the analytic school because of technology’s historical associations with science, a group of praxis philosophies (as applied by Ihde) offer quite different fruits.

Central to Ihde’s philosophical work are *phenomenology* and *existentialism* (see e.g. Dreyfus & Wrathall, 2009) and, in turn, these two come together with his applications of *hermeneutics* and *pragmatism*. A significant development from the interplay of these four has been Ihde’s leadership in shaping *post-phenomenology*. I’ll now explore such terms in more depth.

Phenomenology is perhaps best described as a philosophical movement rather than a ‘school’ of philosophy. The movement defies close definition so it is for phenomenologists to articulate their respective stances. Founded by Edmund

Husserl around 1900 it was originally foremost a theory of knowledge distinguishing between perceptual and abstract properties of objects and came to be understood as a new way of *doing* philosophy – the *phenomenological method*.

Phenomenology can be considered the study of *essences* and involves *deep reflection*. It distinguishes between *appearance* and *essence* and is concerned with judgments, perceptions, emotions. While it probes the meaning or nature of phenomena (events or things), it does not produce empirical or theoretical observations. It offers accounts of our lives and worlds as we experience them through conscious acts. Husserl's original formulation, viewed as *transcendental phenomenology*, called for description of what immediate experience tells us through a 'reflective attentiveness'. To achieve this it is necessary to *bracket*, or suspend, any pre-conceptions, theories or already-held explanations about the phenomenon encountered; hence Husserl's famous dictum: "To the things themselves". He established the discourse around *Lebenswelt*, the *lifeworld*, the everyday world in which we live in our natural, taken-for-granted state; that is, not the theorised and already-explained, already-given world. Here, rationalism hinders the cause; it constitutes a form of bias. As Selinger says: 'Phenomenologists...have always tried to circumvent doxic presuppositions that constrain how open one can be toward pragmatically encountered phenomena.' (Selinger, 2003:12)

Building on the idea of lifeworld as our locus of *being* in the world, Heidegger developed his *existential phenomenology* (which is not *existentialism*), a study of modes of 'being-in-the-world', that is, of human being. Here, the shift is from Husserl's more psychological to an ontological engagement, the latter allowing for consideration of more peripheral aspects of one's existence to be considered – things perhaps not immediately available to our senses but nonetheless aspects of our lifeworld. Other concepts relating to reflections on our lifeworlds are the *background* and the *horizon*; on which, more below.

Collectively, *lifeworld*, *background* and *horizon* are engaged in the field of *hermeneutics*: the theory and practice of *interpretation* (see e.g. Palmer, 1969; Gadamer, 1975/2004,1977; and, on D&T, Keirl 2015b). Historically, hermeneutics was concerned with ascertaining the *meaning* of scriptures and in time the *hermeneutic method* was applied to any humanities-type creation. Questions around true meaning are derived through interpretation rather than from facts produced by 'scientific' analysis. So *hermeneutic phenomenology* '...is a descriptive...methodology because it wants to be attentive to how things appear, it wants to let things speak for themselves; it is an interpretive...methodology because it claims that there are no such things as uninterpreted phenomena.' (van Manen, 1990:180).

This brings us to the concepts of *consciousness*, *intention* and *intentional acts*. In phenomenology, the subject is the person perceiving while the object (thing, event,

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idea) is that which is perceived and the phenomenological method is grounded in *intentionality*. Husserl argued that when we are conscious of an object what is happening is precisely that – we are conscious *of* the *object*, so our consciousness cannot occur without an attendant object. In short, objects constitute consciousness. Rather than saying that we perceive reality through *representations* of objects ‘in the mind’, we can put things otherwise and say that our consciousness is always *towards* an object. Such an object, whether material or imagined, is the *intentional object*.

Pragmatism is also a praxis philosophy concerned with our *practical experiencing* of the world. Ideas and concepts only become valid in the context of experience. In pragmatic philosophy, experience plays a central role in analysis because: ‘...efficacy in practical action...provides a standard for the determination of truth in the case of statements, rightness in the case of actions, and value in the case of appraisals.’ (Rescher, 1995:710). Putting it otherwise, Ihde cites Richard Rorty: “‘The pragmatists tell us it is the vocabulary of practice rather than theory, of action rather than contemplation, in which one can say something about truth...’” (Ihde, 2009b:10). (For more on engagements of pragmatism with philosophy of technology see Hickman, 2001 and Mitcham, 2006).

This Ihdean-philosophical overview now turns to *postphenomenology*. ‘The central mode of investigation for postphenomenology is the application and analysis of the framework of concepts developed by Don Ihde, the founding figure of this perspective. Over a long and continuing career, Ihde has adapted insights from the phenomenological tradition for use in the concrete description of human relations to technology, and has developed his own account of humanity’s contemporary situation.’ (Rosenberger & Verbeek, 2015:2). Rosenberger (2009) suggests that postphenomenology departs from phenomenology in several respects. One is in its pragmatic underpinnings – it is explicitly non-foundational: ‘...rather than make claims about the nature of reality as phenomenologists have, postphenomenology focuses on relations *between* humans and the world.’ Another is because ‘...the spotlight of analysis falls heavily on the technologies which mediate our experience of the world.’ (Rosenberger, 2009:66). He draws on Verbeek (2005) who describes how *things* are not neutral intermediaries but *mediators* that actively mediate our technological relations. (Instrument-as-mediator was a chapter in Ihde’s *Technics and Praxis*.)

To the question ‘What is Postphenomenology?’ Ihde says:

Postphenomenology is a modified, hybrid phenomenology. On the one side, it recognizes the role of pragmatism in the overcoming of early modern epistemology and metaphysics. It sees in classical pragmatism a way to avoid the problems and misunderstandings of phenomenology as a subjectivist philosophy, sometimes taken as antiscientific, locked into

idealism or solipsism. Pragmatism has never been thought of this way, and I regard this as a positive feature. On the other side, it sees in the history of phenomenology a development of a rigorous style of analysis through the use of variational theory, the deeper phenomenological understanding of embodiment and human active bodily perception, and a dynamic understanding of a lifeworld as a fruitful enrichment of pragmatism. And, finally, with the emergence of the philosophy of technology, it finds a way to probe and analyse the role of technologies in social, personal, and cultural life that it undertakes by concrete – empirical – studies of technologies in the plural. This then, is a minimal outline of what constitutes *postphenomenology*. (Ihde, 2009b:23).

IHDE'S APPROACH AND KEY CONCEPTS

Turning to Ihde more closely we can elaborate some of the concepts and approaches he has developed since *Technics and Praxis*. Ihde only selectively addresses Technology (big 'T') thus avoiding a monolithic view – one that sees all technologies in some universal way, for example, as artefacts. He works with concrete examples of particular technologies using praxical philosophical methods to help us better understand our technologically mediated lifeworlds and the intimate and co-constituted multiple realities that exist amongst us, technologies, and society.

In navigating the field of technology and its relations, Ihde engages many significant questions and debates, evidence indeed of the philosophical richness of our field. Thus: how like or unlike is life within our *technosystem* from previous forms of life that humans have taken up? What is the relationship between science and technology? Are technologies neutral? Do we accept or reject the concepts of social and technological determinism? Where is technology in the background or in the foreground? Is technology autonomous? Is there a dualism of natural-artificial? What are the dystopian/utopian interpretations of technology in different historical moments and locations? Does a *technological fix* favour utopianism (or dystopianism)? What do technological developments mean for our species? Is technology controllable? If so, under whose authority? Is control democratic or technocratic or totalitarian? Is control centralised or local? Does hi-tech colonialism disrupt other cultures and/or corrupt of tradition(al cultures)?

As Ihde shows continuously, philosophy cannot provide formulaic answers to such questions, nor are there any simple answers. However, there are two things a philosophy can do: it can provide a perspective from which to view the phenomenon of technology, or better, the phenomenon of human-technology relations. Second, it can provide a framework or “paradigm” for understanding.’ (Ihde, 1990:9). In seeking perspective, he says, the right amount of distance is needed in order to see the uniqueness and the peculiarity of technological culture.

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Likening critical thinking to seeing, he notes that both what is at the tip of one's nose and what is beyond the horizon 'are simply not discernable'. He points out that taking static positions to view and interpret technologies is rarely completely helpful. Better, he says, that we see ourselves as navigators in oft-changing situations, rather than static observers, when considering our relations with technologies.

Eschewing theory-practice distinctions associated with deeper mind-body dualisms, Ihde calls for a praxis approach capable of evaluating positively '...the phenomena of *perception* and *embodiment*' (Ihde, 1979:xix) and, specifically: 'Phenomenology with its rediscovery of the 'primacy of perception' and its emphasis upon concrete forms of objectification...becomes a praxis philosophy from which a 'materialist' interpretation of technology can arise.' (Ihde, 1979:xxv). In developing his position out of the 'so-called Continental philosophies', he cites existentialism, phenomenology, 'some strains of pragmatism', along with dialectical Marxian forms. Of these, he shows how the work of Marx articulated issues around alienation, modes of production, utopian/dystopian takes on technology, and the question of technologies' (non-)neutrality. He also signals the way existentialism confronts human-technology relations in enlightened or unenlightened; optimistic or pessimistic; empowering or disempowering ways. (Ihde, 1979:xxiv-xxv).

Technology-science relations

Describing the need to find new ways of understanding technologies, Ihde noted '...a long previous silence on the part of most philosophical traditions...' and advanced the *praxis philosophies* which '...broadly defined, are those which in some way make a theory of action primary. Theory of action precedes or grounds a theory of knowledge.' (1979:xv). This last point draws in the question of the relationship of philosophy of technology to philosophy of science. In counterposing analytic philosophy (derived from logical positivism) with phenomenology Ihde speculated that, in the origins of both, technology would have been of little interest having largely been considered 'at best' applied science (Ihde, 1979 xviii). As he notes, 'To assume that technology is applied science, that engineering is dependent upon science, that technology is made possible by science – all revolves around a presumed primacy of 'theory' over 'practice', of 'mind' over 'body'....adding that '...if there is a 'paradigm' within the dominant tradition regarding a science-technology relation, it is one which simply takes for granted the primacy of science.' (Ihde, 1979:xxii).

Ihde (1979) notes that many ethical and political-social questions concerning technology are directed toward the *effects* of technologies. Having noted that ethics comes too late to technology (see also Keirl, 2009) and that, by tradition, technology is inadequately positioned as 'a merely neutral instrument' of science, Ihde took to contemplating a different interpretation of the science-technology

relation. In drawing the analogy of the mind-body relation, he suggested that each relation could be inverted. That is, we might talk of a technology-science relation with (after Heidegger) technology as the origin or cause of science and a body-mind relation with body as likewise source of, or inspiration for, mind. In philosophical terms Ihde was developing a shift from an *idealist* primacy to a *materialist* primacy.

In 1979, Cohen & Wartofsky speculated that ‘More than likely, inherited parochialisms and prejudices deriving from the dominant tradition in philosophy of science will continue to shape contemporary work. All the more reason for the anti-parochial and broadening impact of Ihde’s studies...’ (1979:xii). Philosophy of technology could never stand a reasonable chance of either clear identity or success as a discipline so long as it was tied to the apron strings of a philosophy of science any more, I would argue, than if it were tied to the apron strings of any other discipline (sociology comes to mind). However, there are clear links and parallels across disciplines and Ihde’s work, engaging with earlier Latour (1987) explored, en route to a philosophy of technology, ways of looking at both fields as well as promoting the concept of *technoscience*.

Ihde (1991) argued that a principal shift in how science had been practised resulted from the development of increasingly sophisticated (technological) instrumentation. ‘I thus read the philosophy of science through its need for and neglect of a concern for technology.’ (Ihde, 1991:xii). In developing his praxis-perception model of the philosophies of both fields he shows how science is what it is because it became *technologically embodied* through instrumentation. Science cannot ‘be’ without technology. Ihde, here, was bringing phenomenology and ontology to *interface* the philosophies of technology and science. Furthermore, his work was shifting the dominant view of a science-driven technology toward one of technology-driven science, in fact one of technologically-embedded science. In his summary position, written almost three decades ago, Ihde comments; ‘‘Today’s Big Science is so closely tied to Big Technology that one can meaningfully speak of a single, complex phenomenon which is both scientific technology and technological science: *technoscience*.’ (Ihde., 1991:138). Twelve years later came the publication of the teasingly entitled *Chasing Technoscience: Matrix for materiality* (Ihde & Selinger., 2003). The text’s explorations of the material dimension of technoscience are enlightening for how they engage the thinking of four leading theorists and authors: Donna Haraway (*cyborgs*); Ihde (postphenomenology); Bruno Latour (*actor-network theory*); and, Andrew Pickering (the *dance of agency* and the *mangle of practice*).

Technology and the Lifeworld

In the early 1990s, two Ihde texts came in close succession. Prior to *Instrumental Realism* (1991) was *Technology and the Lifeworld* (1990) which offers us a useful overview of Ihde’s thinking and approach to the challenges facing *philosophy of*

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technology in the context of major global and existential concerns. Using the subtitle *From garden to earth* Ihde draws a thread from a non-technological Eden to an imaginative New Garden applying, as usual, rich and concrete examples. In setting out his philosophical stance he never betrays his sense of care for the planet, for people and for inter-cultural, inter-faith wellbeing.

For Ihde, *lifeworld* ‘...locate(s) the inquiry within the traditions of *phenomenology* and its related *hermeneutic* origins’ while interpreting *human experience* with a concern for *perception* and *bodily* activity and his approach moves from a phenomenology of *human-technology relations* to a hermeneutics of *technology-cultural embeddedness*. (Ihde, 1990:21). Ihde distinguishes *perception* in two senses – *microperception* which is immediate, and focussed bodily through the senses – and *macroperception* which he describes as cultural or hermeneutic. These two dimensions of perception ‘...belong equally to the lifeworld...are intertwined...There is no microperception (sensory-bodily) without its location within a field of macroperception and no macroperception without its microperceptual foci.’ (Ihde, 1990:29).

Technology relations and our lifeworld

Ihde deepens our understandings of how we are technologically situated in our lifeworlds by articulating four sets of *relations* and the concept of *horizontal phenomena*.

Embodiment relations ‘If much of early modern science gained its new vision of the world through optical technologies, the process of embodiment itself is both much older and more pervasive. To embody one’s praxis *through* technologies is ultimately an *existential* relation with the world. It is something humans have always...done.’ (Ihde, 1990:72) Whether citing spectacles, a hearing aid or a blind person’s cane, Ihde calls such existential technological relations with the world *embodiment relations*. The technologies are adopted *into* one’s way of perceiving the world *through* such technologies. One’s perceptual and bodily sense is transformed in reflexive ways by engaging with them.

Hermeneutic technics Whereas, in his embodiment relations, the self and the technology work together in relation to the world, in his hermeneutic relations, the self is in relation to the technology-in-the-world combination. While the self in these respective scenarios is in differing perceptual positions, Ihde notes that ‘...in the broader sense, interpretation pervades both embodiment and hermeneutic action.’ (Ihde, 1990: 93). He also notes that a possible confusion can arise from the fact that there is a double sense in which a technology can be used: ‘It may be used simultaneously both as something through which one experiences and as something to which one relates.’ (Ihde, 1990: 93). (Spectacles offer an example where they are worn ‘to see’ yet also bring the ‘self’ into a special relationship with a focussed-on technology-in-the-world.)

Alterity relations

Alterity is about otherness, about alternatives (as in *alter ego*, that is, a state of *being* that is radically different from one’s regular, conscious self.) In phenomenological terms there is distinction between the self and that which is not self, that is, that which is other; and there is an assumption of being able to detach oneself in order to attain alternative ways of ‘seeing’ a technology. Ihde characterises alterity relations as relations *to* or *with* a technology and notes how strange this must seem to anyone limited to ‘...the habits of objectivist accounts (in which) technologies as objects usually come first rather than last’ (Ihde, 1990:97) and where ‘definition’ is sought solely by reference to an object’s characteristics and technical properties. Ihde works to avoid what he sees as a Heideggerian tendency to see the otherness of technology in negative terms. Rather he espouses ‘...an analysis of the positive or presential senses in which humans relate to technologies...to technology-as-other.’ (Ihde 1990:98)

Background relations Here, Ihde addresses not technologies in the foreground of one’s life and technology relations, immediate and to-hand but, rather, ‘...those which remain in the background or become a kind of near-technological environment itself.’ (Ihde, 1990:108) Setting aside discarded or no-longer-used technologies (loosely, junk) he gives examples of technologies designed to function in the background such as semi-automatic and automatic machines and systems. Another example he proffers is that of human-made forms of shelter (of whatever type may be found around the planet) which are not with us at all times but are part of what he calls a ‘field-like background’. While, individually, all such technologies are in the background, collectively they contribute to what Ihde calls our technologically textured world/s. He also usefully talks of the ‘absent presence’ of such technologies.

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Horizontal phenomena ‘...(H)orizontal phenomena...mark the boundaries of a phenomenology’ Here, horizon, for Ihde, is a ‘...limit concept...beyond which the inquiry ceases to display its internal characteristics.’ (Ihde, 1990: 112). As with the common understanding of the term, the horizon never comes nearer although he admits that ‘...the question of the extremities beyond which there is no recovery, where perhaps technologies cease to be technologies, remains intriguing.’ (Ihde, 1990:112-113). He explains further that ‘...whether we refer to a kind of inner horizon (the fringes of embodiment) or the extremities of the external horizon (the ultimate form of texturing that a specific technological culture may take), the result is one of “atmosphere”.’ (Ihde, 1990:114). Examples of such atmospheres could be pessimism around nuclear threat or the optimism once prevalent that technology could save us from the great ills of the world such as war, famine, and disease.

Thus, ultimately, Ihde brings us fully through a continuum from our tangible body relations with technologies to relations which are present, ‘out there’ and atmosphere-creating. All such human-technology relations are shapers of our lifeworld/s. Equally, all such lifeworlds constitute our technologically textured cultures.

Cultural hermeneutics

Ihde moves away from the immediate human experience of technologies to take a perspective on *cultural hermeneutics*, on how cultures *embed* technologies. He breaks these into the following inquiries:

Technology transfer – technologies as cultural instruments. Here Ihde engages with how we (and cultures) both adopt technologies and adapt to them in new ways – ways that alter our behaviours and cultural norms. Obvious illustrations come from ancient tribal and Aboriginal cultures encountering technologies from colonising or invasive other cultures (e.g. Diamond, 1998) but, as Ihde cautions, the adaptation of a transferred technology ‘...depends upon its being able to fit into an extant praxis. But even when it is adapted, the context of significations may differ quite radically relative to the sedimented type of praxis in the recipient culture.’ (Ihde, 1990:127). In other words, adoptions and adaptations are never assuredly consistent or known. (viz Nixon, 1996; Tenner, 1997; Ihde, 2006).

Neocolonialism as the failure of transfer. Whilst there are issues around technology transfer in a cultural-instrumental sense, Ihde also points to the kind of resistances that can be encountered regarding the associated infrastructure necessary for successful transfer to occur. It is often not simply a matter of embedding ‘the technology’ but culturally acceptable changes are needed to ways of working, being, maintaining, and so on. Supportive public awareness and education systems are needed too. If a public is under-educated about the related consequences then ethical arguments arise around the agendas of those committing the transfer. While more technicians may be needed to support the introduction of a particular technology, there is also at play an ethically problematic argument around whether education might be expected to enculturate a populace towards acceptance of the incoming technology.

“Controlling” technology. While Ihde argues that the idea of ‘controlling’ technology is misconceived, he urges that the debates around any such control should not be dismissed and signals the ‘serious politics surrounding technological development’, pointing to the ethics of matters too. ‘The type and degree of technology assessment currently practiced is clearly too minimal and primitive – as well as too controlled by those who need to be “controlled”.’ Regarding the quantitative thinking applied to risk assessment, he argues: ‘The very agencies whose practices must be assessed insist that the terms of assessment be technocratic in form. In turn, the style of assessment becomes modelled upon the most quantitative of ethical and political theory – some variation of utilitarianism.’ (Ihde, 1990:143).

He suggests that the question of controlling technologies be re-framed because it ‘...either assumes that technologies are “merely” instrumental and thus implicitly neutral, or it assumes that technologies are fully determinative and uncontrollable. Both extremities...miss the point of the human-technology and the culture-technology relativities that would reconstitute the debate.’ (Ihde, 1990:140). As he says, even if the analogous question were put: ‘Can *cultures* be controlled?’ the degree of complexity to be considered reveals how a positive answer becomes nigh

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impossible. He neatly adds: ‘There is even good reason to see the twentieth-century concern for “control” of technology as the contemporary equivalent of the nineteenth-century obsession with the “control” of nature. Neither question, in my estimation, is posed properly.’ (Ihde, 1990:140).

Technology-culture embeddedness as multistable

At one point of developing his lifeworld take on technologies, Ihde summarises his position thus: ‘Negatively, I have argued that there is no single or unified trajectory to “Technology” (with the capital “T”), that technologies...are not “autonomous”, and that the very framing of the question of “control” is put wrongly. Positively I have argued that technologies are non-neutral and essentially, but structurally, ambiguous...(T)echnologies transform experience and its variations...(and) that at the complex level of a cultural hermeneutics, technologies may be variably embedded...’ (Ihde, 1990:144). He draws explicitly on the phenomenology of perception work of Merleau-Ponty (1945/1965) and introduces the term *multistability*. Ihde shows how common examples of psychologies of perception are essentially bi-stable (the Necker cube is a favourite - it can be perceived ‘this way or that’). However, as with the phenomenological method in general, ‘Phenomenology goes much further in the analysis of perceptual multistability. Its aim is to examine the variations exhaustively to show structural or invariant features. With the search of possibility-structures in mind, such an analysis further deconstructs such multistable objects.’ (‘object’ here being the object of phenomenological attention) (Ihde, 1990:144).

Further iterations

Finally, I share three Ihdean iterations which further reflect his postphenomenology.

The Designer Fallacy Ihde also uses the multistability concept to resist ideas of technological, or social, determinism. In a succinct and useful contribution to discussions of design-as-intention he presents ‘The Designer Fallacy’ (Ihde, 2006:121) drawing on a notion espoused a century earlier regarding literature and much of the arts in general – that of the ‘intentional fallacy’. The thinking was that we would understand meanings of texts and artworks if we could uncover an author’s or artist’s intentions. Ihde identifies and explores two ‘interstices in a three-part relation.’ These spaces or in-betweens are, first that between designer-inventor and materiality and, second, between the artefact and user. In the first there is no simple control by designer over material – the situation is exploratory, iterative and interactive - and in the second, the designer has even less control and the user becomes the more important. As he says: ‘The indeterminacy here is multistable in terms of the possible range of uses fantasized or actualized...Both the designer-materiality and the artefact-user relations are complex and multistable...(and)...are not of any simple “deterministic” pattern.’ (Ihde, 2006:130).

Bodies in Technology (Ihde, 2002) At the turn of the 21st Century emergent technologies were not only throwing up new possibilities of empowerment but they were giving rise to new existential reflections and research possibilities across disciplines. Ihde articulates how ‘(w)e are our body in the sense in which phenomenology understands our motile, perceptual, and emotive being-in-the-world’ but we are also bodies in socially and culturally constructed ways. Traversing these two ‘dimensions’ is the technological dimension – Ihde’s embodiment relation – how we experience our worlds through technologies. Witnessing the convergence of virtual, simulation and computer-modelled technologies in media, medicine and science more generally, he concludes thus: ‘We are our bodies – but in that very basic notion one also discovers that our bodies have an amazing plasticity and polymorphism that is often brought out precisely in our relations with technologies. We are bodies in technologies.’ (Ihde, 2002:138).

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Towards posthumanity? In his foreword to the Olsen et al. (2009) text, Ihde writes of new and emergent issues and arguments. He notes how the ‘posts’ of postphenomenology, posthumanism and postmodernism are ‘all on stage’ and he asks: ‘From the range of fashionable enhancement to virtual species manipulation, where do our nano-, bio-, and medical technologies lead? (Ihde, 2009:xi). As we once again face unknown futures which will assuredly be technological, to say that we are becoming, or are already, ‘bodies in technologies’ is to invoke discussion of the trans- or post-human (see Bostrom, 2009). In typical ubiquitous style, Ihde had already shaken the tree by turning the question back on itself in his essay: ‘Of which human are we post?’ (Ihde, 2008). Drawing on Francis Bacon’s notion of four idols to be avoided as a (then) new era was dawning, Ihde offers his own four idols to be avoided when discussing human, posthuman and transhuman issues:

- the idol of Paradise (technofantasies)
- the idol of Intelligent Design (design arrogance)
- the idol of the Cyborg (hybridising ourselves with machine and animal combinations)
- the idol of Prediction (gambling on futures)

‘I suggest here, that only if humans are stupid enough to end up worshipping the very idols they create, could the fantasized replacement of humans by machines take place. Rather, the changing technologies with which we interact, form collectives, (or) experience the dances of agencies, do forecast vastly changed conditions of work and play and even love, but it is not them versus us.’ (Ihde, 2008:56-57) (See Hallström Chapter XX in this text)

What, then, can education make of Ihde’s work and his ways of looking at our technological being?

BRINGING IHDE TO TECHNOLOGY EDUCATION

My own curriculum inquiry is driven by one question: ‘Why is it...when the phenomenon of technology constitutes such a pervasive and hegemonic part of life on the planet, that it is so ill-addressed in education?’ (Keirl, 2007:77). How can we help students really see and understand the roles technologies play in their lives? That Ihde has much to offer Design and Technology (D&T) Education I have absolutely no doubt. How to realise this raises two broad questions. First, to what extent is D&T willing to adopt and adapt phenomenological approaches into its way of being? Second, in what ways is it inhibited from doing so? To answer these we have both to take stock of where we are now and to assess our potential to adopt and adapt. Such assessments are necessarily philosophical, political, professional, and pedagogical.

Philosophically, ‘Western-style’ education systems are historically grounded in the analytic/logical-positivist mode, and despite many countries practising alternative

religio-philosophical traditions (Buddhism, Taoism, Confucianism), there is an increasingly ‘Western’ influence across the globe whereby knowledge is seen as readily identifiable, quantifiable, teachable, and assessable. The epistemological frame is prescriptive and praxis-type philosophical approaches are peripheral to the main game. Despite Deweyan pragmatism (e.g. Dewey, 1916/1966), nascent Anglo-American philosophy of education from the 1960s onwards was strongly analytic (witness Phenix’s (1964) *Realms of Meaning* or Hirst’s (1974) *Forms of Knowledge* and their inability to accommodate anything like D&T other than as, perhaps, craft or applied science). Today, matters are compounded politically by the Organisation for Economic Cooperation and Development’s (OECD) thinly-veiled agenda on education for capitalism by competitive assessment regimes in the valorised three ‘subjects’ of first language (at a functional level), mathematics and science. (Keirl, 2015a) Notable by their absence are the very subjects which resist positivist assessment – we might call them the humanities, which might include D&T.

This said, for some decades now there have been moves towards at post-modern curricular innovation and these have opened up some curriculum controversies which, I have argued, apply to D&T (Keirl, 2012). Apart from any philosophical differences, such controversies emanate from critiques of the very purposes of education, that is, they are political and engage questions of the role of education for democracy; education’s relationship with economies; the preparation of young people for active citizenship; and so on. D&T finds itself caught up in all such matters to some degree or other (Keirl, 2006) and it can choose to be marginalised, be a passive onlooker, or it can be a mainstream player in the curriculum game.

There is a spectrum we can consider that runs from *indoctrination*, to *enculturation*, to *training*, to *education*. What differentiates these are the degrees of critical thinking, capacity for autonomy, reflection and responsibility achieved (or not), that is, they are the kinds of attributes that can create fulfilled individuals and strong, participatory democracy. D&T in many of its orthodox guises has undoubtedly operated in a positivist mode of utilitarian skilling, training and industry preparation. Ironically, D&T is potentially an educationally exciting beast that remains trapped in an educational straitjacket.

To see where Ihde and (post)phenomenology comes in we turn to how he so cogently brings the technological world out of the background. His interrogations of technologies are such that we begin to ‘see’ them in their fullness far more than as mere object or thing (in the utilitarian sense). This at once provides opportunities for students to learn more fully about technologies’ multiple and diverse society-, culture- and existence-shaping roles. By adopting/adapting Ihde’s phenomenological approach to human-technology-world relations, by considering technologies as key to lifeworlds, and by anticipating his idols, D&T can make curricular adjustments to enrich its offering and value to students. How then can a holistic conceptualisation of Ihde’s technological world be brought to the

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classroom? Here, the concept of technological literacy arises. In simple terms, three possibilities occur: a) D&T remains a subject of utility and training while art, science and social studies attempt to take on other aspects of technology 'education' (*fragmented approach*); b) a whole-school *technological literacy approach* is taken where every teacher's responsibility is towards a programme rich enough to articulate Ihde's holism; or, c) a *comprehensive approach* which articulates both (a) and (b).

Clearly, this isn't going to happen overnight but Ihde would be the first to examine every possible option and invert the challenges to create opportunities. So far as curriculum and pedagogy are concerned there are some immediate advantages. First, we are currently free from the OECD-style testing regimes and thus have some, relative curriculum freedom. Second, *design* is a magnificent educational enabler. Like phenomenology it has no prescriptive strategies or 'right' answers; it can allow for suspension of judgment (bracketing as 'what if') to amplify possibilities; and, it sharpens intellectual capacities for seeing and being. Third, competing complex values systems and relations can be foregrounded to facilitate democratic discussion of technological presences and possibilities. Fourth, the currently pernicious STEM agenda of positivist instrumentalism can have its weak epistemological basis challenged. Fifth, we can erode the orthodoxies of technology as objects; as hi-tech; as applied science; and, as inevitable (Keirl, 2006). Sixth, we can articulate a publicly defensible form of D&T education that resists popular stereotyping – of either the subject or technologies-in-the-world. Finally, D&T can be, if not a curriculum leader, then at least a serious and central curriculum player – not at the horizon of matters.

In all such ways D&T can make rich contributions to the education of each student and to the wellbeing of democratic life. Perhaps the simplest starting point I could advocate is that of, first, seeing education itself as a technology (in that it is a human-designed-and-made entity) and, second, applying Ihde's (post)phenomenological methods to it to see what emerges. Ihde would not see as a crisis all the major problems facing us globally today. Nor would he ever neglect them. His way is to at all times journey with curiosity and optimism. Phenomenology can help all D&T players see and be in new ways because it is *a method of looking otherwise* at problematic phenomena which humans have created and which are now challenging existences locally and globally. If it has taken forty years of Ihde's work to move phenomenology centre-stage of Technology's drama, then we can either say 'there's no point because we can't wait that long for education to change' or we can start now in our pedagogy, school policy making, community actions and political arrangements. If lived experience is what counts for persons', for cultures' and for societies' wellbeing then the praxis philosophies time must have come for education.

The phenomenological act, properly conducted, is an educational act. If the praxis philosophies are experientially focussed then where better to articulate them than

through the *doing* field of enlightened D&T education (I see *doing* in multiple ways here – critiquing, designing, making, creating). As van Manen says: ‘Phenomenology demands of us re-learning to look at the world as we meet it in immediate experience’ (1990:184) and he reports that Merleau-Ponty describes the work of phenomenology as ‘painstaking’. ‘Making’ the invisible visible is no small task but if our relations with each other and with the planet matter then we must find ways to educate about technologies’ intimate roles in our lifeworlds. Ihde offers us rich possibilities. Is Design and Technology Education up to the challenge?

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