# The body as mediator of the world: contributions by Maurice Merleau-Ponty and Don Ihde

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This article focuses on Maurice Merleau-Ponty's phenomenology of the body and his explications of the body as mediator of the world. Merleau-Ponty's notion of the body which projects the cultural world around it by means of 'making' (*technē*) and 'using / applying' (technique / habit acquisition), is complimented by Bourdieu's notion of individual and social *habitus*. However, the significant contribution by Don Ihde - contemporary American philosopher of technology - on the structural relations between the body and technology, better serves as an extension to Merleau-Ponty's phenomenology of our bodily engagement in the world. In fact, Ihde's notion of human-technology relations and mediation are mutually inclusive. In their explications of embodiment and technics, the Ihde- Merleau-Ponty pair gives us a comprehensive idea on mediation and on the relations between the body, perception, the cultural and symbolic world and technics.
**Key words**: body, Ihde, mediation, Merleau-Ponty, technics

**Die liggaam as bemiddelaar van die wêreld: bydraes deur Maurice Merleau-Ponty en Don Ihde**
Hierdie artikel fokus op Maurice Merleau-Ponty se fenomenologie van die liggaam en sy uiteensetting van die liggaam as bemiddelaar van die wêreld. Merleau-Ponty se idee dat die liggaam die kulturele wêreld projekteer deur die proses van 'maak ' (*technē*), aanwending / toepassing (tegniek / gewoontevorming), word uitgebrei deur Bourdieu se idees oor individuele – en sosiale *habitus.* Die belangrike bydrae deur die kontemporêre tegniekfilosoof, Don Ihde, ten opsigte van die strukturele verhouding tussen die liggaam en tegnologiese artefakte (of tegnologie), vul Merleau-Ponty se fenomenologie van die liggaam-in-die-wêreld baie goed aan. Ons kan aanneem dat Ihde se konsep van mens-tegnologieverhoudings en bemiddeling gepaard gaan. Die Merleau-Ponty-Ihde – paar se werk gee vir ons 'n beter idee oor bemiddeling, oor die verband tussen die liggaam, waarneming, die kulturele – en simboliese wêreld asook tegniek.
**Sleutelwoorde:** bemiddeling, Ihde, liggaam, Merleau-Ponty, tegniek

The phenomenological notion of 'world' is that it functions as a horizon that always exists as long as I am alive, a horizon that contains everything for me or for us (Bakker 1965: 20). For Merleau-Ponty, the world is neither a single 'thing' nor a 'sum of things' nor the sum of my understanding or perceptions of reality, rather, the world is what I am - the ground of all things from which all things emerge as processes or unfolding in time and space. Merleau-Ponty looks at spoken language and perception in the same manner, that is, as processes of unfolding and becoming.

Therefore, when mental life extends outwards over human space and we invest certain states of temperament, attitudes and emotion (by projection and association) in people and in landscapes, as some intrinsic characteristics of them, the 'human world' can become the 'homeland' of our thought, instead of being only a metaphor and representation of our thought (Merleau-Ponty [abbreviated as PP] 1970: 22-4).

Merleau-Ponty directs us to painting as one of the primordial and authentic acts of perception: 'Painting awakens and carries to its highest pitch a delirium which is vision itself, for to see is to have at a distance…'(Merleau-Ponty [abbreviated as PrP] 1964b: 166). Thus, the 'painter's role is to grasp and project what is seen in him' and 'the painter's vision is a continued birth' (PrP: 167). It is therefore in the perceptual field that the body-subject simultaneously 'inhabits' the object and has it at a distance. This Being of which vision is a part (vision that is both 'inhabiting' and 'having at a distance') is what Merleau-Ponty develops into an ontology of the flesh when he regards the body as a sort of a bursting open; an 'overlapping' in which 'things pass into us as well as we into the things' (Merleau-Ponty [abbreviated as VI] 2000: 123) that is 'the intertwining of the body with the visible things' (VI: 49).

In his development of his concept of the unity of the body and soul, Merleau-Ponty retains and transforms the conception of a structure or *Gestalt* as a third notion between 'facticity'[1] and 'thing' in his search to overcome the two poles of Cartesian thought (Merleau-Ponty 1995: 4, VI: xxi). The body and soul flow into each other to become aligned. The analogy between the sciences (physics, biology, psychology, and so on) as symbolic behaviour (*Gestalt* figure-ground relations on a horizontal level, and vertical *Gestalt* relations of 'body and soul') and the human behavioural *Gestalt* was the basis for Merleau-Ponty's new structure for the sciences (Kisiel 1970: 261-2).

The 'fusion of body and soul' in our being-in-the-world can also be hermeneutically interpreted as the fusion of horizons of the natural and human sciences, and as an analogue to inter-cultural and inter-human understanding. Merleau-Ponty's notion of 'intertwining' in his last work ontologically underpinned his new structure for the sciences. The focus was the way that human meaning, culture and symbolic behaviour are all to be laid bare for our research and analysis by means of a phenomenological study of human perception in the lived world (Kisiel 1970: 256, 259).

**Perception**

I perceive something in a perceptual field which is a framework that 'embraces' both object and perceptual awareness (VI: 49). The limits of a visual field are not clearly cut out like a window framing a landscape, with sharp edges cut out of our objective world; instead 'we see as far as our hold on things extends'(PP: 277), and thus the limits of the visual field extends beyond what I actually see.

In normal perception, *Gestalt* theory teaches us, we perceive a figure against a background. For instance, when listening to music, we hear a melody instead of distinct musical notes; the perception of a *Gestalt* includes the individual and collective senses (cf. Dillon 1997: 66; Gordon & Tamari 2004: 17). Elementary perception is already laden with meaning, because any form of perception requires the consciousness to bestow meaning on it. Merleau-Ponty explicated sense experience based on experiments on the effects of colour on bodily experience thereof.

The qualities (for instance, of the colour yellow) have a specific bodily attitude towards that colour so that the motor basis of the qualities are revealed (PP: 210-11). Before becoming an objective spectacle, the quality (yellow) is revealed by a particular behaviour of my lived body that is directed towards that quality in its essence. The moment my body reacts to it, I am a 'quasi-presence' of that specific colour. The painter Kadinsky claimed that green is a restful colour and makes no demands on us. Goethe believed that blue 'yield[s] to our gaze' and red 'invades the eye' (PP: 210). Colour (sense experience) is therefore an amplification of our motor being. Merleau-Ponty writes, rather poetically, that 'we must rediscover how to live these colours as our body does, that is, as peace or violence in concrete form'. In this way, Merleau-Ponty proposes that sense experience is a power we are born into – the sensible is acted upon by our body, so that sensation is literally a form of communion. (PP: 211-12).

My body possesses 'a universal setting, a schema of all types of perceptual unfolding and of all those inter-sensory correspondence which lie beyond the segment of the world [which we actually perceive]' (PP: 326). Herder's comment that '[m]an is a permanent *sensorium commune*[2] (PP: 235), who is affected now from one quarter, now from another' is a new notion of the body schema for Merleau-Ponty; it is a new description of the unity of the body, and the unity of the senses and the object. Here we again notice the germination of Merleau-Ponty's later ontology of

the flesh when he also says: 'My body is the fabric into which all objects are woven…' (PP: 235). My body gives significance to natural and cultural objects, such as words or music, which induce certain bodily experiences or an event that 'grips' or 'moves' me.

Merleau-Ponty expanded on the concept of the body schema derived from *Gestalt* psychology. The body schema is crucial to our sense of perceptual identity and unity as things. It is a function that enables the finely co-ordinated movements that the thing elicits (Morris 2008: 116). For Merleau-Ponty, the body schema emerges due to bodily action within the world, and as actively 'taking up' the expressive unity of the body. Within this phenomenon, the body schema communicates a meaning-direction (*sens*), both to the body and to the world (cf. Hass 2008: 82; Morris 2004: 35). The main achievement of *Gestalt* psychology for Merleau-Ponty was that it recognised that the structure of behaviour is accessible from within and without and that behaviour is 'melodic' in terms of its solutions to problems (Morris 2004: 23).

The body schema becomes the law by which our bodily spatiality is constituted (PP: 98-9). The dynamic motility of the body schema[3] means that the body's being-in-the-world has to be understood in terms of actions to be fulfilled, tasks and free space which 'beckon' in advance, eliciting certain potentialities and possibilities for the body for action, which shows that the pre-reflective 'I can' of the body precedes the 'I think' of consciousness (Macann 1993: 173-4; Madison 1981: 24). This notion resonates with Poincaré's reference to one's body as the measure of distance and the way in which external perception relates back to my perception of my body (Poincaré 1897) and the fact that my body image is dynamic and changeable - Merleau-Ponty says:

> Every external perception is immediately synonymous with a certain perception of my body, just as every perception of my body is made explicit in the language of external perception….The theory of the body image is, implicitly, a theory of perception (PP: 206).

**Intersubjectivity**

The social aspect of our existence in Merleau-Ponty's thought is the origin of language. In other words, expression presupposes inter-subjectivity, and through our bodily motility communication and other forms of expression, such as poetry, music, painting, each performed in our individual styles, take place. This makes us part of history, as Merleau-Ponty believes that history is not a series of events but rather people in the world – as he puts it: 'history is other people'(PrP: 25).

In its contact with the world, the body always transcends itself, just as language transcends itself, and, once spoken, language outlives itself (PP: 392). Merleau-Ponty's notion that we co-exist and have communality with others via our corporeity is coherent with the transcendental character of the body. In VI, Merleau-Ponty conceives inter-subjectivity anew as an intercorporeality (De Jonge 2002: 23), inasmuch as different subjects are specific instances or configurations of the same flesh.

Meeting the other takes place in the corporeal sphere as a spontaneous and immediate reciprocity of meaning, where meaningful bodily gestures supplement one another (Bakker 1965: 76). To have communality with others means that we share the same world, and this is achieved by language, which is the 'cultural object' that plays a crucial role in the perception of others (PP: 354). Language constitutes a common ground for myself and other people, as through language "my thought and his[or hers] are interwoven into a single fabric…we have here a dual being" (PP: 354).

Moreover, "the word, far from being the mere sign of objects and meanings, inhabits things and is the vehicle of meanings. Thus speech does not translate ready-made thought,

it accomplishes it." (PP: 178). There is a gestural meaning immanent in speech – therefore language conveys its own teaching and carries its meaning to the listener's mind (PP: 179). The orator's speech is thus his thought, inasmuch as he is possessed by speech.

To sum up: in addition to the natural world, he social world is already a permanent f eld or dimension of our existence (PP: 362). Merleau-Ponty maintains that the social is not an object from a third person point of view, rather, our relation to the social, just like our relation to the world, is 'deeper than any express perception or any judgment'(PP: 362).

In the same way that nature, in the form of behavioural patterns, settles in my personal life, nature is deposited in the form of a cultural world (PP: 347). I have a physical world - I live surrounded by earth, air and water, and I have things made by people around me, such as roads, houses, implements and artefacts (PP: 347). Merleau-Ponty describes every artefact as

> moulded to the human action which it serves. Each one spreads round it an atmosphere of humanity which may be determinate in a low degree, in the case of a few footmarks in the sand, or on the other hand highly determinate, if I go into every room from top to bottom of a house recently evacuated…it may well seem strange that the spontaneous acts through which man has patterned his life should be deposited, like some sediment, outside himself and lead an anonymous existence as things. The civilization in which I play my part exists for me in a self-evident way in the implements with which it provides itself…In the cultural object, I feel the close presence of others beneath a veil of anonymity, and it is through the perception of a human act and another person that the perception of a cultural world could be verified (PP: 347-8).

Merleau-Ponty ties the body of the other to the first layer of cultural sediment: 'The very first of all cultural objects, and the one by which all the rest exist, is the body of the other person as a vehicle of a form of behaviour' (PP: 348). In this sense, Merleau-Ponty talks about the other's body not as a vessel that is inhabited[4], but as part of the world. In our cultural world, different objects of everyday use can be handled by a child, for example, a hammer, without being explicitly taught to do so, but the correspondence between seeing doing and doing it by itself is guaranteed by the child's bodily schema. The same holds for language (Bakker 1965: 78).[5] Merleau-Ponty uses an analogy between words and tools: 'As for the meaning of a word, I learn it as I learn to use a tool, by seeing it used in the context of a certain situation' (PP: 403). Used in various contexts, words 'gradually accumulate a meaning which it is impossible to establish absolutely' (PP: 388).

In *The Prose of the World* (Merleau-Ponty [abbreviated as PW] 1991), Merleau-Ponty shows us that language is lived, willed expression. It is not subjected to essences and concepts, but is a dimension of expression. Therefore, because *I use language as an instrument or mediator of expression,* it becomes possible to progress *beyond my own cultural language* to express myself in another language (PW: 40, my italics), which reminds us of Malraux's explanation that style makes signification possible: we must understand the origin of signification and its liberation in the creative act in order to understand other cultures, art and languages, for that matter (PW: 58).

We must remember that perception runs ahead of thought, so that perception gives me the meaning of what is perceived (for example, a chair), after which the sign of the meaning is used to express the meaning (PW: 41). Merleau-Ponty argues that sedimentation is the settling of culture into things (PP: 130). Given that Merleau-Ponty claimed earlier that the body is the first object of culture, one could say that sedimentation is the settling of people into the results of their production. We cannot conceive of a world other than a natural, physical and social world, and 'we must therefore rediscover, after the natural world, the social world,….as a permanent field or dimension of existence….Our relationship to the social is, like our relationship to the world, deeper than any express perception or any judgement' (PP: 360, 362).

Apparel for different rituals, established customs and uses such as culinary practices, sleeping, religious practices, social gatherings and forms of behaviour in interpersonal relations, all form part of people's different lifeworlds through the past, which is brought into our present

lifeworlds. We have different lifeworlds within our cultural practices, for example, the worlds of music, art, science, history, socio-economics, politics, language and technology. Culture is praxis, we use technology (make ourselves instruments) to 'transfigure the biological needs from which they arise' (PP: 88) - the cultural world is a created world.

Technology is one of those cultural practices that have changed and influenced our ways of experiencing our world. The common practice and reference to geometry and methods of measuring space are based on the embodied lifeworld to such an extent that they have been embedded in cultural praxes since Ancient Egyptian building practices around 3 000 BC (Fletcher 1967: 13-27; Ihde 1993: 53). In 593-573 BC the Biblical prophet Ezekiel already described the measurements of the new temple which he saw in a vision. The tools for measuring it, namely a tape and a measuring rod, were handed to him by an angel (Ezekiel 40:3-42:20).[6] In the same period, Pythagoras formulated his theorem on the rectangular triangle, of which the square of the longest side equals the sum of the squares of the two other sides. Euclidian geometry was developed in the third century BC (Rooney 1999: 644,1533). These instances show the deep and intricate relationship between technology and culture (the cultural 'embeddedness' of technology as Ihde calls it), which can often remain hidden (Veseley 2004: 306) to be viewed as part of the culture instead of being a cultural acquisition.

To explicate the global significance of societies' praxes and their influence on individual bodily praxes, Merleau-Ponty refers to the work of Mauss and Lévi-Strauss. As Merleau-Ponty explains in *Signs* (Merleau-Ponty 1964a [abbreviated as S]), social anthropology relates society to the human body; both have two poles: they can be understood from within and both tend toward processes (S: 114). The importance of the work of Marcel Mauss (cited by Lévi-Strauss 2001: 3-4) lies in his explication of the relation between the individual and group in terms of 'body techniques': each mode of behaviour or technique was on Mauss's account, founded on certain combinations of muscles and nerves which formed a proper and dynamic system.

Each society has its own determinants for its system, which is laid down, learnt and transmitted by tradition (Lévi-Strauss 2001: 7). As early as 1924 Mauss also presented the ideas that *symbolic expression is a natural societal phenomenon* and that societies' *symbolic expression is mediated by rituals, customs and societal institutions*.

## The habitual body and habit

Merleau-Ponty shows that in experience, the physical and psychical 'gear into each other' (PP: 77). The 'intentional arc' is the place where the personal projects and biological life (which Merleau-Ponty terms 'layers', 'modalities' and 'folds' of embodied experience) intersect. In PP, Merleau-Ponty uses various terms to describe these interacting layers or twofold modalities: the habitual body and the personal body, the customary and the body at this moment, the biological and personal existence, that which is sediment and the spontaneous, and the organic and the existential (PP: 82, 84, 87, 130). As described earlier, my habitual body guarantees my body at this moment. In PW Merleau-Ponty describes the indirect language of signification.

We have individual styles of behaviour and perception and, according to Malraux, 'perception already stylizes' (PW: 59). Malraux uses the example of a painter's perception of a woman passing by:

> She is a unique way of varying the accent of feminine being and thus of human being, which I understand the way I understand a sentence, namely, because it finds in me the system of resonators that it needs…perception…affects all the elements of a body or behavior with a certain common deviation with respect to some familiar norm that I have behind me (PW: 59).

In the spectacle, the painter finds something that is "subject to a secret principle of distortion"[7] (compared to "the observable") which, translated onto his canvas, the viewer will see as another "typical way of inhabiting the world" that is interpreted through a face, a dress, and "as much through the flesh as through the spirit (PW: 60).

The depth of the meaning of Merleau-Ponty's concept of the body as a work of art or as expression in PP becomes clear in PW. Merleau-Ponty's descriptions of style (especially in his later work) could also be interpreted as an analogy of the habitual body. Edward Casey (1984: 280)[8] says that within habit lies character, virtue and style, and these three exist in an inextricable mixture of behaviour and intention, mind and body. Casey describes Merleau-Ponty's philosophy as a philosophy of depths of two kinds: the depth of the body itself in thought and habit, and the depth that the past supplies to anchor our temporal being (Casey 1984: 279, 282).

Both kinds of depth are grounded in the world by means of our bodies. Merleau-Ponty posits that we cultivate habits and that this cultivation causes a renewed or changed body image (PP: 142), as well as a bodily understanding of its significance. A habit is to involuntarily act according to a set of 'rules' required reaching a certain outcome. These outcomes may or may not be desired outcomes.[9] To be more precise, habit is the motor grasping of a motor significance (PP: 143).

Motor habit throws light on the nature of bodily space, which means that generally a habit lets us understand the general synthesis of the body. Thus, every motor habit is equally a perceptual habit (PP: 152). For the body to understand 'is to experience the harmony between what we aim at and what is given….the body is our anchorage in the world'. Merleau-Ponty describes habit also as 'a knowledge bred of familiarity', and 'sedimentation' (PP: 130, 144, 441). The terms 'everyday life', 'generality' and 'familiar horizons' already imply a high level of motor and perceptual acquaintance with our lifeworld, which I believe largely contributes to our repertoire of pre-reflective behaviour and a level of 'absent-mindedness' in our operations.

For example, I have become accustomed to my house to the extent that I immediately and without looking reach for the light switch on my way to the kitchen. Habit lies between the extremes of custom and spontaneity. Casey (1984: 287) describes 'habitual body memory' as combining permanence with temporality, perception with motor action and self with world. Casey refers here to a form of being that Merleau-Ponty describes in PP*,* namely 'near-presence' or 'ambivalent presence'.

This form of being is like virtuality, as illustrated in the horizon, in things situated behind me, or the phantom limb. These call for "a middle term [or mediator] between presence and absence", and all these forms of being inhabit the phenomenal field *through the lived body* that situates us in the field. Casey (1984: 287, my italics) sums up this idea as follows: This body is therefore a 'habitual body' or 'virtual body' which acts to guarantee the actions of my merely momentary body while enlivening my strictly customary body. Therefore *there is a mediating force situated in the body*, which itself is conceived as 'the mediator of a world (Casey 1984: 287).

Being a mediation of the world, one's body 'understands' its practical and imagined worlds. The body projects a cultural world by making and using technical objects and has the power to communicate and think on the literal and figurative levels. Finally, the body creates and uses symbols to mediate the social world (Wolff 2006: 4). Merleau-Ponty shows us the roles that the lived body plays in habit in three ways.

Firstly, my bodily space is "the matrix of [my] habitual action [and also is] an objective setting; [my] body is at [my] disposal as a means of ingress into a familiar surrounding… [and my body is also] the means of expression of a free spatial thought" (PP: 104). Merleau-Ponty refers here to the habitual and spontaneous body and to symbolic and concrete space.

Secondly, my body also expresses habits through gestures: '…thought and expression…are simultaneously constituted, when our cultural store is put to the service of this unknown law, as our body suddenly lends itself to some new gesture in the formation of habit . The spoken word is a genuine gesture…'(PP: 183). In the last pages of VI, Merleau-Ponty attempts to show how the perceiving human body as structured for potential future action is 'structured as language'. Referring to Saussure, Merleau-Ponty relates the structure of perception to that of language as a 'diacritical, relative, oppositional system' (PrP: 201, 205). Merleau-Ponty and his friend ethnologist Claude Lévi-Strauss shared an interest in Ferdinand de Saussure's structural linguistics and its possible applications outside the linguistic domain.[10]

**Thirdly, our body gives to our life 'the form of generality, and develops our personal acts into stable dispositional tendencies' that constitute our individual styles (PP: 146, 147).**[11]

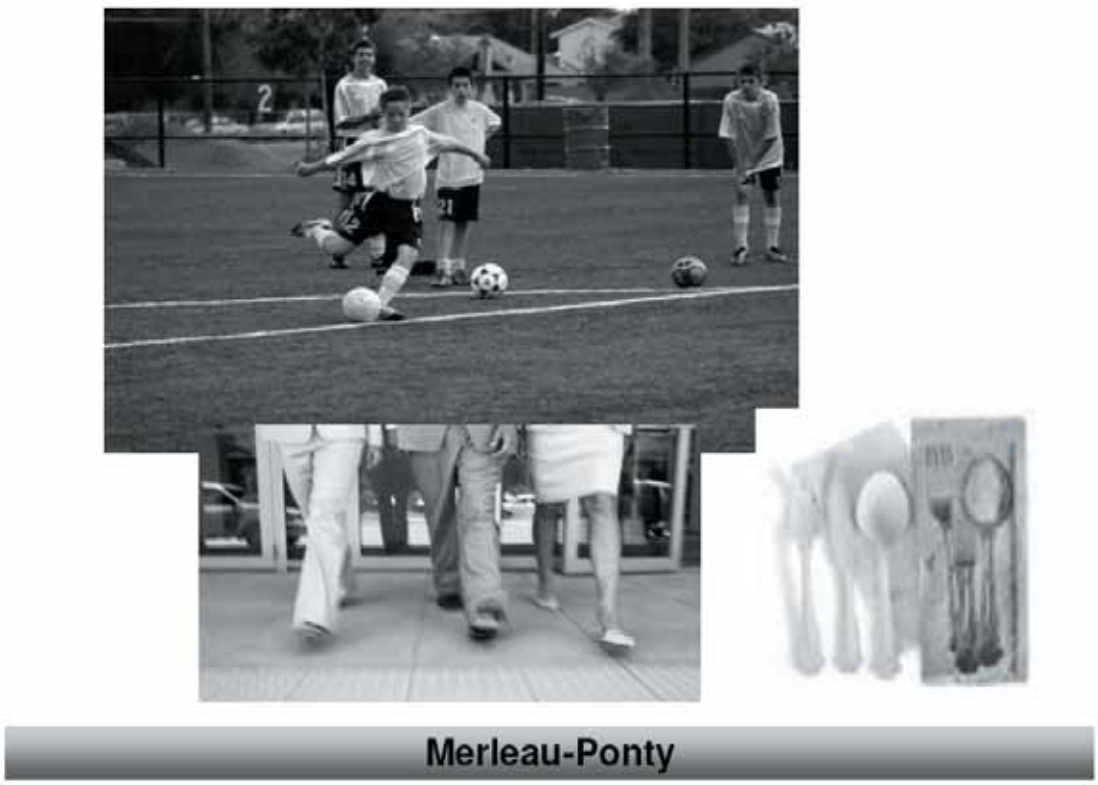



**Figure 1**
**Individual and social practices and bodily technics**
**(source: M. Viljoen, 2010 SAJAH conference presentation based on MA(Phil) research: Viljoen 2009).**

Our body 'at all levels performs the same function which is to endow the instantaneous expressions of spontaneity with 'a little renewable action and independent existence. Habit is…a form of this fundamental power' (PP: 146). Apart from our biological and gestural habits, the body, when necessary, builds itself instruments to be able to achieve the meaning aimed at. Our bodily intentionality is to gain its 'hold'[12] on that which it aims at, even if it becomes necessary for the body, as Merleau-Ponty says, to '[i]ncorporate instruments in our habitual world, [resulting from this bodily intentional necessity] we project around ourselves a cultural world' (PP: 146).

This part of Merleau-Ponty's work is especially interesting. Here Merleau-Ponty uses the examples of the blind man's cane and a woman with a feather in her hat and also that of a musician (organist) – the organist's body becomes an expressive space. Let us turn to each

example to get a unique view of Merleau-Ponty's notion of incorporation - how instruments become incorporated into the body schema. (Refer to Fig. 2).

The woman with the feather in her hat automatically, without any calculation, keeps a safe distance from things that might break off the feather. Merleau-Ponty says she feels where her feather is just as we feel where our hand is, and she automatically incorporates the feather into her body schema. The hat has 'ceased to be [an] object with a size and volume which is established by comparison with other objects. [It has] become [a] potentiality of volume, the demand for a certain amount of free space' (PP: 143).

The blind man's stick has also ceased to be an object for him; it is not perceived as a thing in itself: 'its point has become an area of sensitivity', almost as if his senses have extended to the tip of his stick and almost as if the tip of his stick has replaced a biological organ of seeing with feeling. He uses the stick as eyes that feel: 'The blind man is rather aware of [the stick] through the position of objects than of the position of objects through [the stick]' (PP: 143). The handling of the stick in order to find one's way amongst things is an acquired motor habit and equally an example of perceptual habit (PP: 152); the stick becomes an instrument with which the blind person perceives; the 'hand-stick point of exchange of forces' are replaced by the tip of the stick-world points of exchange between the perceiving body and world.

Merleau-Ponty tells us that the stick becomes an extension of the body and is synthesised in the corporeal schema. The blind man becomes acquainted with the way of using his stick as he tests the position of things that are immediately within the reach of his extended arm to the tip of his stick. However, there is no comparable estimation between the objective length of the stick and the objective distance to the goal to be reached (PP: 152), since he perceives the world 'directly' at the place where the stick and his hand meet. Merleau-Ponty says that to "get used to a hat….or a stick is to be transplanted into them, or conversely, to incorporate them into the bulk of our own body. Habit expresses our power of diluting our being in the world, or changing our existence by appropriating fresh instruments." (PP: 143). 'It thus elucidates the nature of the body schema.. [The body schema] is a system which is open on to the world, and correlative with it' (PP: 143ff).

Brey (2000a: 46-8) proposes that the blind man's cane and woman with the feathered hat present two kinds of embodiment. The cane is indeed an example of an embodied artefact that extends a perceptual human faculty, while the example of the feathered hat is an example of the woman's tacit knowledge of the location of the feather in terms of her environment[13] and not an extension of a perceptual sense. I partly agree with Brey, however, that because the feather is incorporated into the woman's body schema, she has acquired a new style of movement. Because she has an innate knowledge of the spatiality of her own body (Brey 2000a: 48), she would not bump against a door frame with or without the feathered hat.

Since the feather is incorporated into her bodily spatiality, the feather might just as well be a 'virtual' extension of her tactile sense. Not all embodied artefacts mediate feedback from the world. Brey (2000a) adds that the woman does not perceive the world through the feather (as the blind man does through his cane), nor does she gain knowledge of the world in the form of direct feedback as mediated through the instrument, thus, the primary function of the embodied artefact (feathered hat) is not to mediate perception. Embodiment relations are very often behavioural and pro-prioceptive (cf. Brey 2000a: 46).

Artefacts incorporated into the body schema, such as a hammer or a pen, mediate interactive skills. Limited perceptual feedback from the environment is obtained (such as the texture of the paper one is writing on), since the artefacts' primary function is to act on the world (Brey 2000a: 54),[14] while various artefacts in an embodiment relation mediate both perceptual and motor skills

to function in an interactive manner. Merleau-Ponty's example of the blind man's cane is such an instance: firstly, a motor skill is acquired in using the cane and through its skilled use; it withdraws as he learns to negotiate different floor surfaces, ramps and so on, which he can feel through the tip of the cane. Our engagement with the world is mediated through our body's notion of 'I can' (PP: 137), with or without the mediation of technological artefacts.

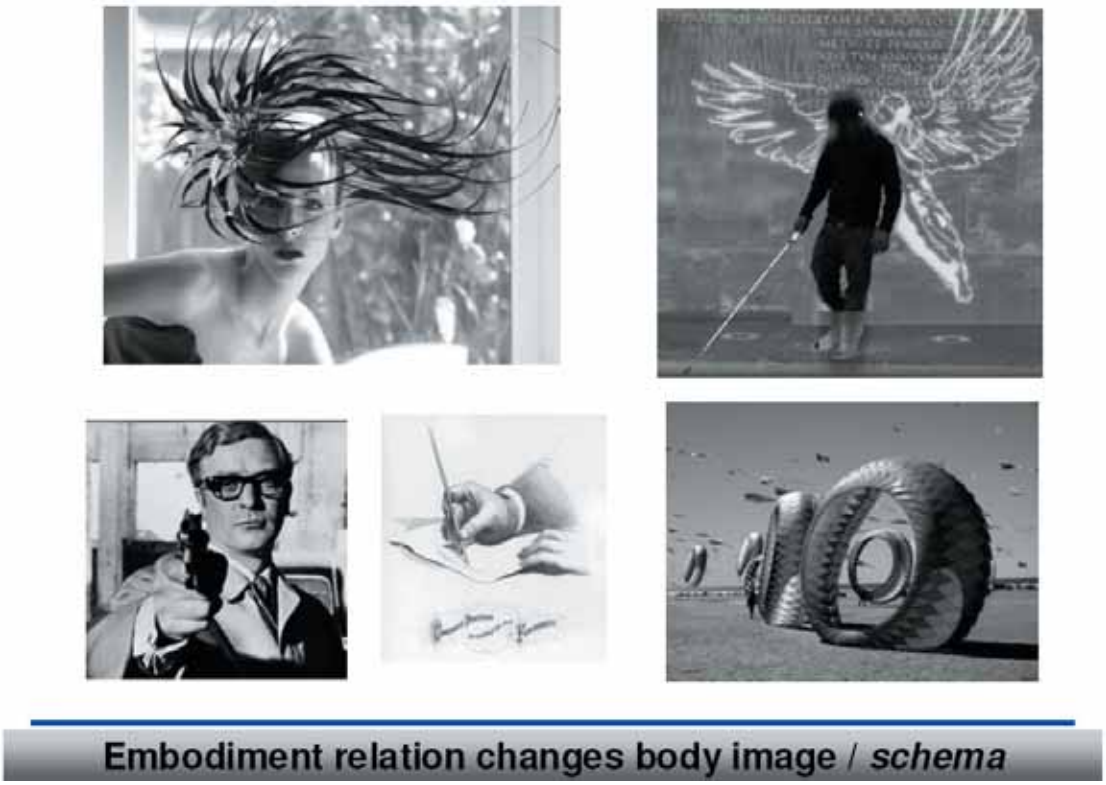



**Figure 2**
**Examples of artefacts incorporated into the body schema**
**(source: M.Viljoen 2010 SAJAH conference).**

These two examples explain how the cultivation of habit is the bodily motor grasping of a motor significance (PP: 137). In this regard, Merleau-Ponty quotes Grünbaum: 'Already motility, in its pure state, possesses the basic power of giving meaning (*Sinngebung*)' (PP: 142). The poetic description of how the body becomes an expressive space is elucidated by Merleau-Ponty as he writes about the organist. This, I believe is what Merleau-Ponty means by how habit expresses our power of 'dilating' our being in the world; and through which a person's style creates unique expression: as the organist acquaints herself with the instrument on which she has to play for a concert (a different one from the one she usually practices on) her body quickly grasps it:

> She sits on the seat, works the pedals, pulls out the stops, gets the measure of the instrument with [her] body, incorporates within [her]self the relevant directions and dimensions, settles into the organ as one settles into a house. Between the musical essence of the piece as it is shown in the score and the notes which actually sound round the organ, so direct a relation is established that the organist's body and [her] instrument are merely the medium of this relationship. Henceforth the music exists by itself and through it all the rest exists (PP: 145).

Being-in-the-world does not just happen with our bodies endowed with automatic skills to get a maximum hold[15] on our setting; instead, we are born with these potentialities to be developed into skills, as we learn to live (in) our bodies and to act in the world. What we learn from bodily motility is that bodily experiences impose meaning – my body is thus 'that meaningful core' and in experience 'we learn to know [the] union of essence and existence' which we find in perception generally (PP: 147).

Through our implicit bodily hold on and view of the word, a geometrician (and architect) can construct line drawings that depict lived space and express the essence of form (as the presumption of a completed synthesis (PP: 387) which is simultaneously an expression of our corporeal possibility for experience.[16] This very important insight by Merleau-Ponty can be combined with the notion that everything that I perceive, 'exactly as I see it, is a moment of my personal history' (PP: 215). Therefore, we cannot reject mythological space, ritual space or space experiences of my dreams or those in hallucinations, because all these spatial experiences are based on a primordial spatiality in terms of which Merleau-Ponty claims that these experiences are modalities (PP: 281-7).

This is important for me as architect, because specific spatial experiences are derived from our facticity, which enables me to design by means of a specific skill or technique, a style, a signification that is inter-culturally understandable as the possibility for bodily experience of space or place. Merleau-Ponty expresses our bodily relation to space as verbs: the body 'haunts' space (PrP: 5); it 'inhabits' space (PP: 139, 429); it radiates intentions in terms of possible movements in space (PrP: 5, cf. PP: 109). We 'transport' our phenomenal bodies in space (PP: 106) and my body 'applies itself' to space like a hand to an instrument (PrP: 5). How does my body do this? Merleau-Ponty may not have described this specific notion in depth, but one discovers a treasure that I believe deserves emphasis. Firstly, the body is a 'place', a situation. Secondly, the body is an active intentionality, the notion of 'I can', and the experience of space presupposes motility. Thirdly, the body applies itself to space as a form of habituation.

By virtue of bodily motility, each 'there' is a potential 'here'. For Merleau-Ponty, this tension created by bodily space is the beginning of its transformation into universal space and theoretical space (PP: 108,109). Bodily motility and its possibilities are grounded in this tension (PP: 109) and they provide the foundation for spatial orientation where space forms a horizon for multiple possible movements, expressions and so forth. Lived space is also an expression of our cultural practices, for example, our personal space preferences: I may not feel uncomfortable in an aeroplane, sitting very close to (and in economy class, sometimes literally rubbing shoulders with) strangers on both sides. Our perception in lived space and the 'description of human space … can be developed infinitely' (PP: 287).

Merleau-Ponty holds depth to be the most existential dimension of the three Euclidean dimensions that constitute a representation of space that is understandable to and practical for human beings. He argues that depth is the only dimension that belongs clearly to our perspective and not to things. Therefore, depth cannot be extracted from our perspective and nor can consciousness put depth into things (PP: 256). We experience depth at the 'crossing' or 'collision' of body and world (Morris 2004: 23; PP: 429).

He reverts to the relation of subject and object to show that depth shows us the inextricable link between things and ourselves, while width and height can still be viewed as relations between things. In an objective setting, the apparent size of the object, the convergence of the eyes and the visual image explains the Euclidean notion of triangulation. Merleau-Ponty says that this ability to grasp the significance of apparent size and distance

> is conditioned by my knowledge that there is a world of undistortable objects….My ability to understand convergence as a sign of distance is conditioned by my visualizing my gaze as the blind man's two sticks, which run more sharply together in proportion as the object is brought nearer….by my inclusion of my eyes, body and the external world into one objective space [can I understand converegance as a sign of distance] (PP: 257).

The phenomenon of 'apparent size' and that of distance are two 'moments' of a 'comprehensive organisation of the field…they communicate through their significance. Apparent size as experience is nothing other than a way of expressing our vision of depth' (PP: 259). That is also why Merleau-Pontly was so fond of Cézanne's approach to his world, regarding Cézanne's

paintings as the products of his primordial perception, analogous to what Gestalt psychology held, namely that perception of changes in shapes and sizes when things are moved away or rotated (such as a disk) happens at a slower rate than we would expect according to geometrical principles of projected perspective.

The apparently distorted perspective in Cézanne's paintings is actually correct in terms of what is perceived in lived space. If the constructed geometrical perspectives were given to us in lived experience, we would not need to 'learn' to construct perspective, as we have to in the Renaissance paintings (PP: 260). This geometric perspective is for Merleau-Ponty a style; a form of perception and expression at a certain point in time which was more than a mere technique, since this perspective also indicated the 'position' of the perceiver as dominating his /her world (PW: 53,54,56).

**Figure 3**
**Paul Cézanne, *Cherries and Peaches***
**(1885 – 1887, Oil on Canvas, 50.2 x 61 cm, County Museum of Art Los Angeles).**

The Modernist's painters' new conception of space-time showed various overlapping perspectives with different foci where figure and ground are reversible, overlapping and transparent, thereby actively engaging the perceiver. In applying the phenomenological method to his analysis of the interrelation between humans and the world as mediated by technology, Don Ihde's methodological approach in his analysis of human-technology relations (as with his analyses of technologies within these relations) moves towards a variation of the classical phenomenological method.

If we look at the many ways in which Ihde's analyses differ from Merleau-Ponty's notion of phenomenology, it seems at first glance that Ihde alludes only to aspects of Merleau-Ponty's philosophy. However, a closer study of Ihde's philosophy, for example, the very important term 'mediation' in the context in which Ihde uses it in his earlier work on human-technology relations, reveals that it presupposes a philosophical dualism of 'subject' and 'object' with technology in between. However, according to Verbeek (2005b: 129).

Ihde's postphenomenology alludes to Husserl's 'correlation a priori' which began as intentionality, thus it must be borne in mind that Ihde's "mediation consists in a mutual

constitution of subject and object….considering Ihde's discussion of the various relations between humans and artefacts. Mediation shapes the mutual relation in the concrete constitution of subject and object….Humans and the world they experience are the products of technological mediation"(2005b: 130 Verbeek's italics). According to Verbeek (2005b: 132-3), the latter aspect is underexposed in Ihde's philosophy.

Ihde takes a strategic step in his method of enquiry. His method is built on both pragmatism and the more concrete existential hermeneutic traditions. Appropriating postphenomenology, Ihde analyses cultural embodied perception (multi-stable macroperception) and presents individual (micro)perception in an autobiographical style, referring to specific instances in his everyday life from which he analyses technologically mediated intentional relations. He then presents these relations in an uncomplicated manner. Ihde's method is a hybrid of phenomenology and pragmatism that closely resembles Dewey's pragmatic method.[17]

**Ihde's definition of technology**

At an early stage of his thinking, Ihde gave a general definition of technology in terms of the contemporary debate in North America. Firstly, technology has a concrete component or a material element. Secondly, humans make use of these components: 'technology must enter into some set of praxes' (Ihde [abbreviated as PT] 1993: 47) and within these set of praxes, there are specific differentiated types of relations between technological artefacts and humans who use and make them. However, Ihde excludes many techniques as directly related to technology, for example, dancing or athletics (PT: 48). In my opinion, all techniques are directly related to technology[18] for the following reasons: firstly, the body-subject acquires habits and techniques that are necessarily at some point directly related to technology within the body-subject –world[19] relation.

Ihde provides a second definition of technology: technology is based on the necessity of embodiment in Ihde's (two-way) relational structures, which are discussed below. In a third definition, Ihde explains that in human-technology relations, techniques are required either to interpret data produced by instruments or machines, or simply to 'operate' or perform certain actions to enable technologically mediated intentions. Having defined 'technology', Ihde went on to explicate the dialectics of technology and science, body and mind, theory and practice. Ihde proposes applied reason and a practical approach to appropriating the phenomenological method. He aims to show how science is related to technology and praxis, and believes that much of modern science is to be re-interpreted 'in the light of its…..***instruments***' (PT: 111, Ihde's italics).

Ihde's phenomenology of technics is explicated mainly in his seminal work, *Technics and Praxis* (Ihde [abbreviated as TP] 1979). He takes Heidegger's thought as his first point of departure (especially Heidegger's views on the primacy of technology and the initiating nature of praxis[20] in terms of science and philosophy, and on science as the 'tool' or 'instrument' of technology (TP: xi,xxi)). Ihde's second point of departure is to examine technē [21] or technics and its mediating role in the human-world relation (TP: xii). In his text *Existential Technics* (Ihde [abbreviated as ET] 1983), Ihde defines technics as 'the human use of artefacts to transform a lifeworld, employed through skills or techniques' (ET: 80).

According to Ihde, the question of technics and the human being is 'one about the variable possibilities of our seeing [itself and ourselves]…through the focus upon techniques' (ET: 90, see Wolff, 2009a). On the whole, Ihde is widely recognised and acknowledged for his valuable contributions to the philosophy of technology. I focus on Ihde's incorporation of and expansion

on key aspects of Merleau-Ponty's phenomenology of perception, but start by looking at Ihde's early explications of the intentional relation between human beings and the world-by means of technology and how technology in turn mediates our perception and experience of the world.

## Human-technology relations

Ihde's approach to understanding the ways in which human beings engage with and appropriate technological artefacts in everyday life involves applying the phenomenological methods of Husserl, Heidegger and Merleau-Ponty, especially in order to examine the intentional relations between the perceiving human being and the world. However, that is where Ihde's appropriation of the classical phenomenological method ends, as mentioned before. The unmediated perceptual human-world relation is much more complex when technology plays the role of mediator between human beings and the world.

From the perspective of human-technology relations, Ihde gives a relativistic account, 'which overcomes the framework that debates about the presumed neutrality of technology, and it avoids extremities, such as one which "reifies" technology into Technology' (Ihde [abbreviated as TL] 1990: 26) and a structural account in his effort to understand the role of technology in our lifeworld. Ihde analyses human-technology relations on the level of experience (in terms of perception) and of culture (Verbeek, 2001: 123; TL: 27). On the level of experience, Ihde wants to understand the different roles that technology plays in our relation to reality. On the level of culture, he inquires about the relation between culture and technological artefacts (Verbeek 2001: 123).

Ihde writes that the limits of a phenomenological account of human-technology relations in the lifeworld are 'those imposed by the limits of a relativistic context of [the] I-world relations' in which human action and agency is implied (TL: 26). Furthermore, a phenomenological account is also structural by nature, because a phenomenologist, in his or her examination of certain relations, seeks to understand the structures (which can be simple or complex and multi-dimensional) of those relations, and which aspects of those structures are fixed and which are changeable. The different elements of phenomenology, that is, 'the dynamics of perceptual-bodily activity in actional (sic) *praxis*' are to be 'combined with the elucidation of relational structures', which is the 'function of the notion of the *lifeworld*' (TL: 27).

Referring to Husserl's concept of the lifeworld, Ihde points to a dual focus in Husserl's concept. On the one hand, the focus is the notion that the lifeworld is the basic level of primordial experience, with the complexities of what Ihde calls 'primary perception' (TP: 4). On the other hand, the lifeworld is 'the totality of all implicit beliefs and assumptions that we take for granted, from which we interpret our world' (TP: 4).[22] In Husserl's text *The Origin of Geometry*, Husserl's concept of lifeworld combines a historical and a structural account of 'geometrizing thought in practical activity' which Ihde also adopts in his works (TL: 28). For Husserl, geometrical praxis is a cultural acquisition that has become a sedimented and intuitive cultural practice.

When Husserl's notion of intuition (as constituted, in other words, the geometrical context) is combined with the practical and material, this is a combination of two different praxes that Husserl made into one praxis, one derived from the other (TL: 29).Ihde modifies Husserl's examples by distinguishing between two levels of human perception: firstly, the bodily level of sensory perception, which he calls 'microperception' and, secondly, a level of interpretation that shows meaning and is cultural in nature, which he calls 'macroperception'.[23] Both belong to the lifeworld (TL: 29). Ihde's concept of macro- and microperception can be regarded as undifferentiated, but already implied, in Merleau-Ponty's notion of perceptual openness to the world and to the cultural

world that is projected by habit acquisition in the use of instruments which subsequently changes our existence (cf. VI: 212-3; PP: 145-6; WP: 13-15).

The world of perception consists of all the natural objects and the 'world of culture'(WP: 101). Merleau-Ponty says in PP (xvi-xviii) that the world which is given in perception is 'the concrete, *inter-subjectively constituted lifeworld* of immediate experience. Moreover, it is a world of familiar cultural and natural objects, of other people, the world in which I act' (PP: xvi, my italics).

For Merleau-Ponty, certain phenomena of perception are 'given' by culture, such as the perspectival deformations of objects in the Renaissance perspective, because apparent size at a distance is not perceived as such. It follows that perception is 'polymorphic' and its becoming Euclidean is perception's orientation by the system. Thus, Ihde adopts Merleau-Ponty's notion that culture is perceived (TP: 87; TL: 40).

An inherent problem in Husserl's analysis, according to Ihde, is the 'bifurcation between the prescientific [lived world] and a scientific "world"' (TL: 37). For Ihde, this bifurcation makes the process of cultural acquisition difficult for Husserl to explain, as 'Husserl's Galileo thus stands caught between a prescientific but perceived lifeworld and a scientific but unperceived world of ideality' (TL: 37).

However, in *Instrumental Realism: the Interface of Philosophy of Science and the Philosophy of Technology* (Ihde [abbreviated as IR] 1991), Ihde argues that geometry is an acquired lifeworld technique (IR: 17-21). From this point of view (or paradigm in the Kuhnian sense), Husserl's analysis is not problematic, as I believe that Husserl accepts the notion that cultural acquisitions are sedimented in our lifeworld. Merleau-Ponty writes that 'there is a dilation of perception' (cf. PP: 143), a 'carrying over …of "natural" perception to instrumental relations…which obliges us to put in continuity the perceptual openness ….to a cultural world (acquisition of the world of instruments). [T]his original layer above *nature* shows that learning is *In der Welt Sein* and not at all that *In der Welt Sein* is *learning* …in the cognitive sense…' (VI: 212).

On the basis of 'micro-' and 'macroperception', Ihde develops three theses in his analysis of technics in terms of the human-machine relations that I shall summarise below. For now, it is important to note that our relations with technology are greatly influenced by our cultural heritage, in that technologies are transferred across generations in a specific cultural context, which also greatly transforms or influences the way in which we perceive our lifeworld. At a microperceptual level, when I use a particular technological artefact, the artefact and I are in a particular relation within which both my experience and my perception of the world are changed. Thus, for Ihde, at both the macro- and microperceptual level, the technologies we use make our specific lifeworlds possible.

I might add that the notion of micro- and macroperception is already differentiated in Merleau-Ponty's explication of individual sensory (bodily) perception, inter-subjectivity, the cultural world, as well as his explication of our different lifeworlds. From this, one can deduce an interim level of perception, namely 'meso-perception' and add it to Ihde's notion of micro- and macroperception, which indicates the lifeworlds of smaller communities, such as the philosophical community, the architectural community or the religious community. Each instance is a sub-culture within a larger cultural whole. Ihde distinguishes between micro- and macroperception to show us that our relations to and experience with/of technological artefacts or instruments may indeed be transformed on various scales, which results in paradigmatic shifts in our lifeworlds.[24]

Ihde has three underlying theses in his analysis of technics. Firstly, our experience of technological artefacts is diverse and, in order to explicate our experiences and different types

of relations between humans and machines, Ihde applies the notions of intentionality of Husserl and Heidegger's philosophy (from which Ihde derives functional correlations), namely Husserl's '*Ego-cogito-cogitatum'* and Heidegger's 'Being-in-the-world'-interpretation of intentionality. Secondly, 'relations with machines are non-neutral[25] in the sense that they, by their very use, imply reflexive results for ourselves' (TP: 4).

The third underlying thesis in Ihde's analysis of technics is that '[h]uman-machine relations are existential relations in which our fate and destiny are implicated, but which are subject to the very ambiguity found in all existential relations' (TP: 4). This ambiguity originates from our existence in the lifeworld. Therefore our very facticity 'prevents' us from conceptualising and forming 'any total closure into…technocracy as an absolute mode of existence' (TP: 4). In other words, our very being in the world does not allow for complete technological determinism and therefore there are asymmetrical relations between human beings and technological systems or artefacts (albeit in this sense, total dominance of technics over human beings).

Working from this three-fold premise, Ihde draws diagrams (TP: 6; ET: 53-6) based on his first premise: Husserl's and Heidegger's notions of intentionality show *what is experienced*; that is,

$$\text{Human} \rightarrow \text{World},$$

The focus rests on experience, according to Ihde. However, reflection on our involvement with the world leads to a reflection of ourselves, as Ihde explains, and the interrelation between the world and the human being can be expressed as follows: $\text{Human} \Leftrightarrow \text{World}$.

Based on Husserl's notion that my relation to the world is intentional, and it is only in the world that I can understand myself through reflection, Ihde calls the relation between the world and I 'interactive'. I project myself in the world and 'I find myself reflected in the world' (Hickman 1990: 120). Ihde gives us three examples as variations of this interactive or 'projective-reflective' relationship between self and world.

Ihde's first example is a hunter-gatherer society, which has a relatively low level of technology, and where the main concerns are hunting animals and gathering plants to sustain the community. Ihde regards a culture's concerns as the determining factor in the types of knowledge that its members possess and the ways in which this knowledge is transmitted (Hickman, 1990: 120-1). In this example, these may be the hunting rituals and dances and applying associations between parts of the body and medicinal plants for healing those parts of the body. Therefore, the relationship of 'similarity' and 'likeness' between the human body and the world is characteristic of this culture's form of life.

In his second example, Ihde refers to an agricultural society, in which the main concerns are the seasonal and life cycles of their crops and herds. This cultural form of life is characterized by the relationship of correlation between human and world. Ihde then describes a mechanized form of life as characterized by impersonal and machine-like relations. The human body is also thought of as a machine. Hickman (1990: 121) regards this form of life as characterized by its relationship of 'objectification'.

Ihde's concludes that these different forms of life relate to one another in three ways. Firstly, there is some form of 'projection-reflection' relation between humans and the world. Secondly, each form of life is 'anthropomorphized', in that the 'projection-reflection' structures and outcomes are human products of human concerns. Thirdly, our own contemporary manner of 'projection-reflection' is functionally equivalent to agricultural and mechanized forms of life. Therefore, in our contemporary life, practice precedes cognition and the self is placed in

and is part of the world, rather than separate from the world. In our contemporary life, our 'self-knowledge' has improved (Hickman, 1990: 121).

It is important to note that the first three structures laid out below are invariant structures that apply to different cultures and contexts (cf. Eason 2003: 178). These structures are, firstly, embodiment relations; secondly, hermeneutic relations; thirdly, alterity relations; and fourthly, background relations.[26] Ihde mentions a possible fifth structure that he places under the heading 'horizontal phenomena'. I think it is necessary to note (before we look more closely at Ihde's model) that he calls himself a 'critical phenomenologist' in terms of his epistemology (cf. Eason *et al*. 1993: 129). He marginalises the ethical and moral implications of a vast range of technical praxes, but Ihde includes these aspects in an extended model in his later texts. Now let us return to each of the structural modes of human-technology relations that Ihde built onto the initial sketch of non-mediated experience in the intentional relation between human beings and the world.

I return to Heidegger's famous example of the hammer as a useful analysis of the use of instruments. It explains the relation of embodiment between the human being and the instrument. When a carpenter uses a hammer to drive in a nail, the instrument is 'ready-to-hand'; it 'withdraws' or recedes into the background, because his focus is the nail, which is the object of his intention. The hammer functions within the situation that it is used in and therefore the carpenter actually experiences the act of driving in the nail, with his focus on the nail and its position on the timber (ET: 50; Verbeek 2001: 125). The tool does not exist by itself, but solely in its context or situation of use; thus a tool is a tool in its 'readiness-to-hand'. When the tool, for any reason, cannot be used in its context of use, the hammer 'imposes its presence' on us; in that case, the hammer is what Heidegger calls 'present-at-hand' (Verbeek 2001: 125; TL: 33, 97).

Ihde identifies three elements of significance in Heidegger's analysis of how tools are present to human beings. Firstly, the tool can be used in and related to a certain context that forms part of a meaningful whole. Secondly, tools or equipment are means to certain ends; they have an 'instrumental intentionality' or are 'something in order to___'. Thirdly, 'when the tool is in use, it is a means of experience, rather than an object of experience' (Verbeek 2001: 125-6).

**Embodiment relations**

I would like to point out that the example of Heidegger's 'hammer' is not only applicable to technological-embodiment relations, but it is also applicable to Ihde's other types of human-technology relations. As I explained earlier, the less resistance is experienced from the world (by means of the instrument) and the more the artefact or instrument performs and functions according to its intended use, the more the artefact 'withdraws' into the background (and is therefore perceived as partially transparent) while I use it to interact with the world.

In the following diagram of technology-embodiment relations, Ihde places the embodiment relation in parentheses to show the phenomenological differences in the mediating role that technology plays in terms of the original (Husserlian-Heideggerian intentional correlation) structure. In the case of wearing spectacles, for instance, there is what Ihde calls 'a partial symbiosis' (TP: 8) between the human being and the spectacles. This is indicated as follows:

(Human-technology) → World.

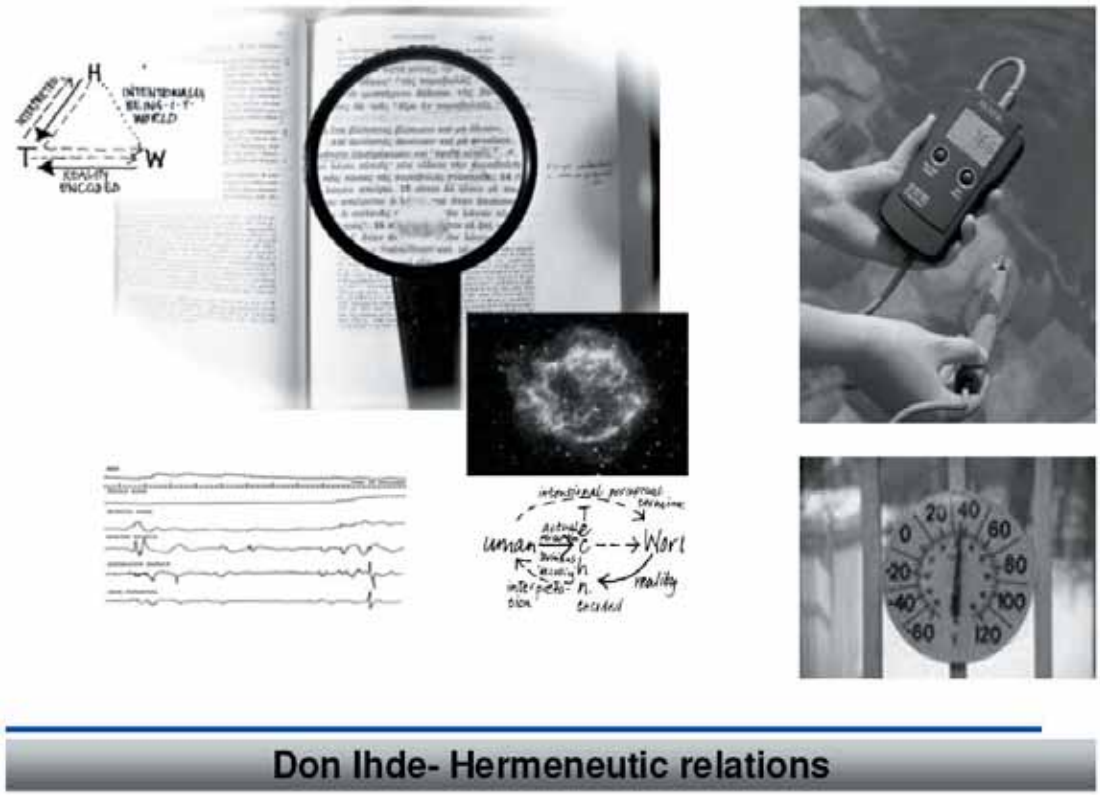
The more technology 'withdraws' or becomes 'transparent', the more human action (embodied with, by or through technology) comes to the fore. An idealist position regarding technology (in this instance, 'idealist' means the wish for complete technological efficiency

to such an extent that we are almost unaware of its presence, I believe) would be to strive for 'total transparency', a technologically mediated experience that is equivalent to non-mediated perception.

When a technical artefact becomes part of our body schema (as it is involved in an embodiment relation), the higher the level of skill with which I use and handle the artefact, the more transparent it becomes and the more it 'recedes' into the background while mediating my perception and experience of reality (Wolff 2009, discussion). In many situations, we could simultaneously have different structural relations with different technological artefacts.

## Hermeneutic relations

Historically, hermeneutics' primary model is related to the interpretation of texts (TP: 32), which Ihde uses as metaphor to show the qualitative change in the type of mediation-position that the instrument can have in his structural intentionality continuum (TP: 32). The main characteristic of Ihde's hermeneutic relations is the interpretation of the representation of the world by means of technology. The artefact involved in a hermeneutic relation is the terminus of my perception – the machine itself 'imports' that aspect of the 'real world' which I cannot naturally or would




not normally perceive in my everyday life (TL: 91).

**Figure 4**
**Examples of hermeneutic human-technology relations**
**(source: M.Viljoen, 2010 SAJAH conference).**

Ihde suggests that, although it is in hermeneutic relations between humans and technical artefacts or machines that the technology itself is experienced, it does not necessarily follow that the technology is merely an 'object' of experience (TP: 55), rather, my experience is with the machine or instrument. 'Hermeneutical relations... are more language oriented or quantitatively designed and less perceptually direct (such as those found in the use of instrument panels or other types of display instrumentation)' (Ihde 1997: 691-2).

Nevertheless, in our use of the technological artefact in which the artefact is or gives the only representation of that part of the world which we wish to experience, a hermeneutic relation is established in which our perception of the world is mediated by the artefact . This leads to an indirect experience of the world. The instrument as mediator has distinct features and designed attributes, which can be described phenomenologically. For example, an MRI brain scanner.

Ihde presents the hermeneutic relation as follows (TP: 12):

Human[27] → (machine-World)

Ihde says, 'the closer to a focal thematized "other" the machine becomes the more the significance of World must take on machine-like appearance characteristics' (TP: 13). In other words, the machine as 'other' which has 'translated' aspects of the real world into signs, codes, figures or text, gives me the translated data which I have to 're-translate' or decode and interpret back into a representation of the real world. Therefore, no direct perception of the world takes place. Thus:

Human → (machine-world)

Similarly, I can 'read' a vast range of icons and signs in the world of architecture, for instance, a building or complex of buildings such as the Union Buildings, Hong Kong and Shanghai Bank or the Burj Al Arab hotel in Dubai, which are symbols of political and economic power and architectural/engineering skill.

The world 'answers' (according to Merleau-Ponty) insofar as the human being and world are mutually constituted, and the world gives reality as it is to the intentional object (instrument) which organises 'reality' into a text, or symbols as a mode of relaying information to the human who is the original enquirer, who has to perform a hermeneutic act in order to grasp that reality.

We are born into cultural worlds (culture is the sedimentation of people into things, as Merleau-Ponty would say). Our worlds are layered with technology. One can almost go so far as to say that our initial primordial experience of nature is already technologically transformed to some degree. Merleau-Ponty alludes to an unmediated perception (and technical hermeneutic interpretation) of the interrelation between nature and technology in his explication of inter-sensory perception in our relation to things. When I look at a wheelbarrow loaded with bricks, I can 'see' weight as the wheel displaces the sand below it. My body 'understands' gravity and the effort to lift or push the wheelbarrow, as if I can already feel the weight by looking at the sight of the wheelbarrow and the displaced sand (cf. PP: 227-30, 325-7).

I believe that this bodily understanding of the world is acquired to become 'habitus' (cf. Wolff 2009b); the technical potential we are born into is developed by our being in the world. So too, our interaction with technology can become 'second nature' in our everyday lives. Merleau-Ponty's, Mauss's and Bordieu's explications of techniques (Wolff 2009b) and habits are applicable to our interaction with technical instruments, an important notion of the human body's spontaneous and habitual engagement with our lifeworld which, I believe, Ihde neglects.

**Alterity relations**

We interact with technologies in our everyday lives. To get an idea of our interwoven experiences of and interactions with technology we do not have to look far: think of using GPS navigation,

parking access machines, ATMs, remote controlled security systems, coffee percolator- alarm clocks and so forth. Our everyday technologically interwoven experiences may either be negative (alienating) or positive (technologically interactive), depending on our individual perspectives. The phenomenological explications of the 'other', as well as its implications in alterity relations between technology and the human being is complex. Let us turn to Ihde's explications thereof.

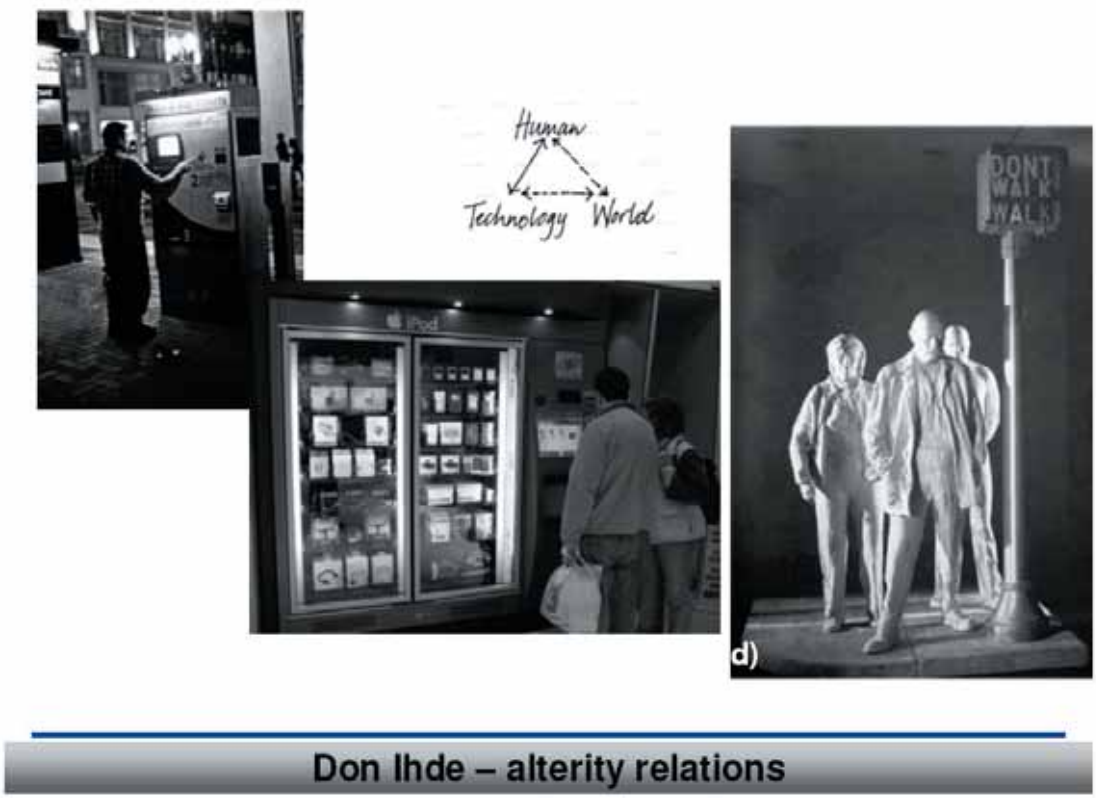



**Figure 5**
**Examples of alterity (human-technology) relations (source: M. Viljoen, 2010 SAJAH conference).**

What Ihde means by the term 'alterity' in terms of praxis includes 'an analysis of the positive [experiential aspects outlining the relation of] humans [and] technology as relations to or with technologies, [moreover] to technology-as-other' (TL: 98,100). Ihde borrows the term from Levinas, but Ihde modifies it for his analysis of human-technology relations (TL: 98). He poses the difficult question of how and to what extent technology can become 'other' or 'quasi-other', because the ranges of interpretations of technologies are vast.[28] They include 'problematic' areas such as anthropomorphism or the personalisation of artefacts, varying from computer 'intelligence' to assigning sacred attributes to artefacts in non-Western cultures (TL: 100). Notwithstanding, the continued fascination with the 'quasi-other' dates back (as far as 200 BC) to the automaton in different lifeworlds and used in various contexts from theatrical plays to war technologies (TL: 100).

According to Vesely (2004: 290) modern anthropology has identified the 'fascination with automatism' as the deepest motif of technicity. This fascination is seen in the endless attempts to grasp what is incomprehensible in terms of what we can build, manipulate, or understand. Vesely describes these attempts as a 'technization' of the 'original mimetic[29] re-enactment'. The phenomenon of interpreting ourselves by means of some 'other' is deeply rooted in metaphor, according to Ihde. This form of self-reflection and self-interpretation was chosen (in primitive contexts) by means of other living 'things' or beings such as plants, animals, other humans or the divine as relevant to humanness.

The insights derived from the 'other' were internalised as a metaphorical self-interpretation (ET: 74). Ihde applies this model of human self-reflective self-interpretation mediated by other living things to human relations with technological artefacts, thus applying a metaphysical metaphor in the primitive 'human - world' relation to his universal 'human – technology - world' relation[30] as a trans-cultural phenomenon.[31] Ihde goes so far in his latest book (referring to post-modern writer Umberto Eco's semiotics of humans and non-humans in his novels) as to describe the 'character' of the 'other' in an esoteric human-technology relation in which non-humans initiate actions (Ihde [abbreviated as BT] 2002: 95).

Ihde points out that, however fascinating the 'quasi-other' may be, the 'quasi-other' is limited in terms of technological selectivity; but it may turn out that the possibility of changes to the initial 'instrumental intentionality' may lead to further and even more interesting developments and 'trajectories' in technology (TL: 102). In alterity relations, the technology becomes the 'quasi-other' or 'technology as other to which I relate' (TL: 107). The machine or artefact appears in front of the world, as if it is experienced as the world. In his diagram, Ihde places 'World' in parenthesis to indicate that technology (in these relations) is experienced as 'the other', albeit not as completely autonomous:

Human → technology -(-World).

Here Ihde shows that in alterity relations, the human being may be in a relation 'through' the technology to the world. For example, when I watch 'real time' or 'live' news on television, I am indirectly interacting with the 'other', and in that case, the television set is the point of contact. (Hence the hyphen in the parenthesised 'World'). In the television example and many other examples such as image technologies, the 'other' might just as well be experienced as instruments or artefacts in hermeneutic relations.

We perceive signs, symbols or data from the instrument which require human interpretation in order to understand an aspect of reality in the world. The locus of our direct perception is the instrument while our intentional perceptual locus is the world. In alterity relations, the loci of our intentional and direct perception end with the instrument/technological artefact, it is as if the artefact is an embodiment of the world.

As I have argued so far, Ihde has shown that in different types of relations technology remains in the 'foreground' or 'ready-to-hand' in our experience in and of the world; technology is material or 'artefactual' (TL:108). However, there are also technologies in the background that are more neutral and on the periphery of our perceptual and conscious awareness, namely background relations.

**Background relations**

Based on Borgman's notion of background relations, Ihde uses the example of air-conditioning systems (cf. Durbin 2005: 98) which regulate room temperature, or other automated environmental controls such as lighting, white noise played in buildings from a centralised music system, but also the 'white noise' produced by the systems and appliances in the background. Ihde refers to our technological environment as a 'technosphere' or cocoon in which we find ourselves, encompassing all dimensions of our relations, which he sketches as follows:

Human → machine
World (TP: 14).

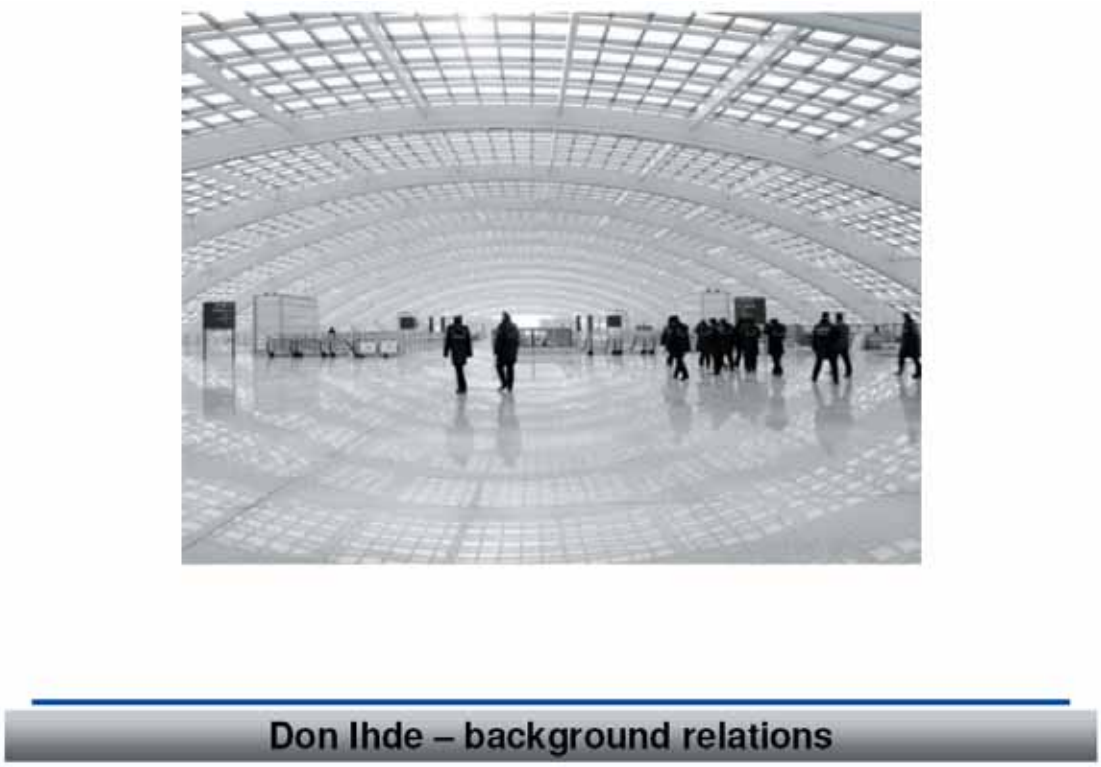



**Figure 6**
**Background relations: the built environment (source: M.Viljoen, 2010 SAJAH conference).**

Ihde also regards the urban setting (as a complex of interrelated buildings) as a field-like background phenomenon, which, depending on the climatic setting, varies from open shelters to completely insulated technological cocoons (a wished-for 'totalized shelter technology into a virtual life-support system' (TL: 110)). City services such as traffic lights, roads, building services, lights, sidewalks and complexes of buildings form a permanent field-like background as we lead our daily lives and go about our daily activities.

As soon as there is a malfunction or breakdown of the background systems within these fields that are perceived (as Ihde terms it) as an 'absent' presence when functioning normally, the technology immediately announces its presence and becomes the focus which points out differences between the 'conditioned' and 'un-conditioned' contexts (TL: 109,111).

## Horizonal relations

The last structure of Ihde's relational model, developed in (TL: 112-15) is horizonal relations. Unfortunately, Ihde accords quite a small section in his texts to the important aspect of horizonal, relations probably because it demands complex and detailed explications, in addition to being a difficult subject area to demarcate. Ihde describes horizonal human-technology relations as those in which the technology's effects transform one's experience of the lifeworld, for instance, prescription medication for various ailments such as diabetes, high cholesterol, depression or high blood pressure.

It is apparent that a vast range of bio-technics is subject to normative and moral stances. Ihde argues that horizonal relations can go as far as the notion that 'you are what you eat' (in fact, most of our daily food is genetically or hormonally altered). The question then arises whether it is possible to demarcate a boundary between technics and the body-subject. Ihde confirms that this is a very complex question. Nevertheless, I shall add another example of what I believe forms

part of our horizonal relations with technology, namely what is called 'biometrics' (cf. Fällman 1999: 10) as a means of individual identification, based on our specific physiological differences, like fingerprints, iris scans or voice recognition technologies.

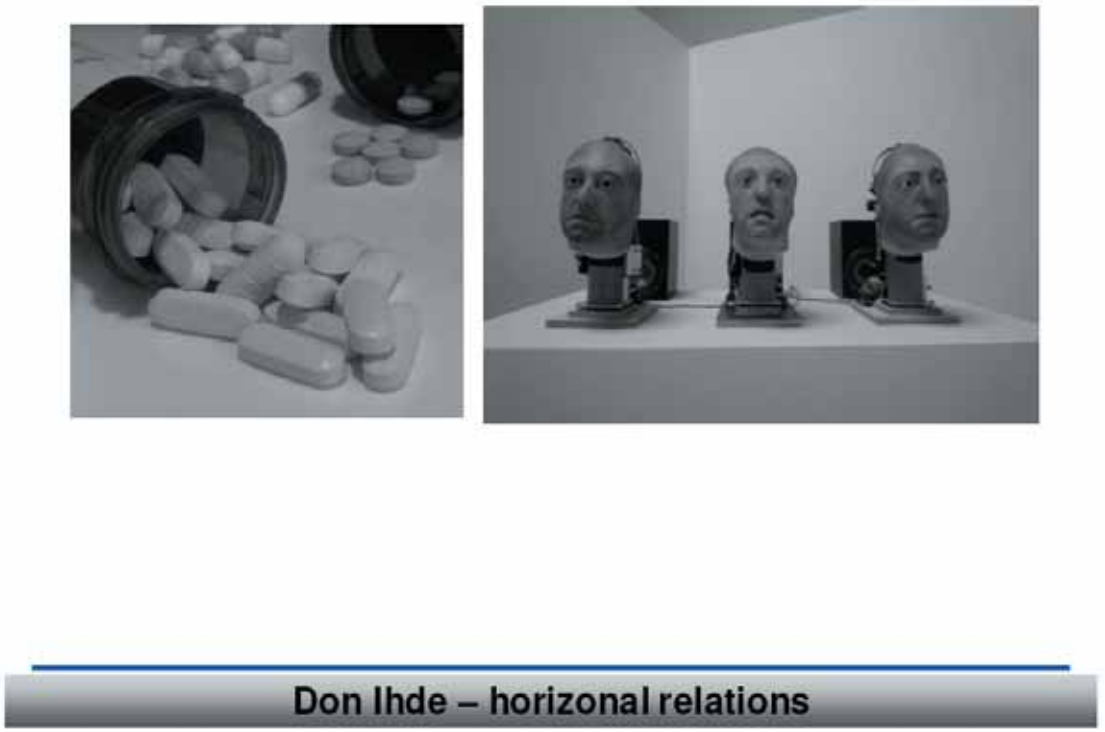



**Figure 7**
**Is there a clear boundary between humans & technology?**
**(source: M. Viljoen, 2010 SAJAH conference).**

The reason for regarding biometrics as an instance of a horizonal technological relation is that the field of identification technics constantly evolves. It may soon become possible for biometric identification as a security precaution to take place without our even being aware of it. Biometrics, birth control and even the production of food products, amongst other technics, may evolve into a form of bio-power (in the Foucauldian sense).

Although these examples may illuminate Ihde's study of the different human-technology relations, they may not be specifically relevant to our experience of built space. Most of these instances play out in their specific 'use' environments within specific phenomenological horizons. Thus it remains relevant that our technological epoch does determine the ways in which our different lifeworlds are made possible and how our experiences and perceptions are transformed by means of technical mediation.

To return to Ihde's main hermeneutic question on the role that technologies play in the way in which human beings interpret reality, Verbeek (2005b: 128) suggests that the answer depends on what type of mediation one is inquiring into – direct or indirect mediation. It is important not to confuse direct or indirect mediation with direct and indirect human-technology relations or direct and indirect perception of technology in our lifeworlds.

While Ihde (BT: 137) says that all human-technology relations are two-way relations, I think that this argument applies only to direct human-technology relations such as embodiment, hermeneutic and alterity relations. Indirect human-technology relations would be background relations and horizonal relations, while direct and indirect perception of technology is what Ihde calls micro- and macro-perception. Nevertheless, let us seek the answer to the question

of the role that technologies play in the way we interpret reality by exploring how Ihde sees technological mediation.

## Technological mediation

> [For Ihde] the direct way of mediation in the origin of meaning, is the mediation of sensory perception. By shaping the way in which humans perceive reality in microperception, artefacts help to determine the possible ways in which [reality] can be interpreted. The indirect way concerns macroperception, or the technological mediation of frameworks of interpretation that coshape the relation of humans to their world (Verbeek, 2005b: 128-9).

Verbeek describes Ihde's notion that micro- and macroperceptions are transformed by means of, with or by (or mediation of) technologies. Thus far we have seen how (in Ihde's structural relation model) our experience of the world is mediated by technologies in their different variations, ranging from the 'quasi-I' to the 'quasi-other' in our interaction with technologies, with the 'absent presence' of background and horizonal relations on the intentional continuum. Technologically mediated experience yields new knowledge. Ihde's examination of what technological instruments/artefacts do, which Ihde calls 'instrumental intentionalities'[32] (TP: 77), is done by applying the 'shapes of intentionality' (experience)[33] as extended by means of instruments.

Instruments can reveal different aspects of the world that are not accessible to human perception in a non-mediated manner (for example, the use of infrared imaging and other technologies used in fields such as the medical field, the military and oceanography to name but a few). Technology in this case reveals a different kind of 'reality' to be interpreted, which can only be achieved by means of the specific technological instruments or artefacts.

Whether it is implied or not, Ihde's take on mediation is as follows. Firstly, mediation may dictate human praxis in terms of the artefact's specific 'protocol'. Operating the machine/device presupposes some acquired skill or habit[34] to apply the machine optimally for its purpose. Secondly, mediation facilitates a 'technological telos' (TP: 77), although the outcome of such a telos may be more radical or 'acute' than mere perceptual changes (think about Chernobyl). Thirdly, this mediation may cause radical changes to our perception and may result in new structures of experience of the world (even if the instrument is partially 'transparent' in the embodiment relation). Fourthly, mediation is, in many cases, literally a material 'intermediary' or a 'situational in-between' the human being and the world. Fifthly, mediation can be one- or multi-directional as well as referential, as shown above.

An aspect that I believe to be lacking in Ihde's work is comment on the role that ethics plays in his analyses of technics and praxis. Therefore I want to add another aspect of mediation insofar as intentional action is involved. The 'operator' or 'user' of the device or machine or system may not be aware of the implications of his or her actions, but ultimately, whether mediation is implied or not, mediation in Ihde's philosophy presupposes human ethical praxis (and here I refer to a Kantian deontology). This aspect of Ihde's philosophy of technology requires future research.

Ihde gives a typical example of instrumental mediation, namely that of writing and technology (BT: 95-9) in which he firstly traces a symmetrical interaction between the human and a non-human (the quill or pen): the human writes letters on a piece of paper in a pre-modern setting; he acts through the pen (the pen is then the mediating technology). The pen modifies and mediates his or her bodily action of producing the letters and *vice versa*: 'Symmetrically, the pen is modified…. [as] it flexes and…wears out…'(BT: 96). A typewriter allows two hands to shape the flow of words 'through the embodiment of body-machine-paper' (in its context) and therefore becomes a 'socio-technical assemblage of humans and nonhumans, in which

different writing instruments contribute to thought', which shows interactivity in another way from the quill or pen (BT: 98).

With regard to contemporary contexts of humans and non-human interaction, Ihde argues that the agencies (human – computer – Internet) form a system in which the action of writing takes place (BT: 99). In this interaction, 'the objects (nonhumans) in such interactions modify the humans…' (BT:10 0), however, the different degrees and different kinds of symmetries remain. What Ihde is trying to say, I believe, is that while technology progressed over time, humans have been the invariant agent (albeit acquiring different techniques,[35]) in the relational system, but although transformations have taken place in these relations between human and non-humans, the symmetries in these relations stay more or less apparent. Viewed in the light of a prevailing symmetry in the relations between humans and technology, in which neither the actor nor the actant dominates or is dominated by the other, Ihde throws some light on technology and our relations to it in our lifeworld, refuting dystopian views.

## The lifeworld and perception

Ihde's version of the lifeworld is close to that of Habermas, in the sense that both see the lifeworld as a centre for 'interpretive schemata' (Welton 1997: 742-3). For Ihde,lifeworld consists of structural styles of embodiment relations between humans and technology in our mediated experience of our environment (Welton 1997: 741). 'Instead of reducing technological artefacts to the technological form of world-disclosure that makes them possible, [Ihde] asks what form of world-disclosure is *made possible by* technological artefacts' (Verbeek 2001: 122). While technology transforms our experience of our lifeworlds, it simultaneously reveals the world in a transformed manner.

Different technologies may mediate completely different perceptions in different lifeworlds, such as (Ihde's example of) the Western navigational system and the South Pacific navigational techniques[36] (TL: 126). Similarly, the use of image technologies and computer software research and development in spatial analysis and geographic information of almost all kinds has proliferated since the development of Virtual Reality and more recently 'Second Life' and 'Half-Life' virtual worlds. Current spatial research in imaging technologies applies 'scale-free' methods varying from statistics, based on geographic information[37] to neural-network analyses to geographic information systems. These interdisciplinary methods are applied to networks from brains to cities, creating models for many things, ranging from air-traffic control systems to pre-manufactured systems of ecology.

Models of 'fractal geometry' are applied to project future urban growth patterns and human behaviour. Fractal geometry has long been appropriated in open systems analyses in which the laws of thermodynamics have been applied in the social sciences.[38] The virtual 'disappearance' of size, a referential scale and distance (the underscoring of lived spatial experience) produces a huge gap between real life and virtual experience, which automatically alters our perception of the world, as well as our conception of lived space. Time and distance seem to be erased so that experience seems instantaneous and immediate.[39]

These techniques of measuring topologies, spatial distributions and geographical information analyses are, in my view, applied to derive demographic and other taxonomic data for political and economic 'power' purposes. They may also assist in establishing standards and norms, since the current availability of such image-based information systems provides opportunities for bio-technological praxes. I would like to call this category of imaging techniques and models of information access 'geo-technology', which can be divided into sub-

categories such as 'taxonomy-technologies', 'eco-technologies' and 'topographic-technologies'. This field needs further study to determine how Ihde's philosophy of technology and Merleau-Ponty's phenomenological method and later ontology of the 'flesh' can throw new light on these technologically mediated lifeworld phenomena.

An important aspect that I find to be lacking in Ihde's writing is an explication of different production practices with or by means of technologies, which are equally explicable in terms of his notion of micro- and macro-perceptions. In terms of this study, the act of building, the human and technological processes and actions involved in constructing our 'settings' for inhabitation, are culturally and bodily informed. The act of building is a complex of embodied, hermeneutic and alterity human-technical relations and the combinations of these technical relations vary between different trades. However, all these trades form part of the whole that we understand as 'building'. I believe an explication of similar examples will throw new light on our direct and indirect relations with technology.

## Conclusion

Ihde, one of the leading contemporary philosophers of technology in North America, shows us that technology cannot be regarded as a neutral or autonomous entity, because it is always, albeit to different degrees, related to human beings within the context of our lifeworld. Therefore Ihde approaches technology and science from a praxis philosophical stance, building on the philosophy of Heidegger and Husserl; firstly, to establish at the 'basis' of his explications the intentional character of our being-in-the-world and, secondly, to position technology within that intentional interrelation.

Ihde's main enquiry is the nature of the mediating role that technology plays in the human - world relation and to determine what types of lifeworlds are made possible by means of technologies and how technology mediates or transforms our perception of our lifeworld while Merleau-Ponty's enquiry is on the relation between consciousness and nature.

It is important to note here that Ihde does not follow Heidegger's ontology of technology, namely the notion that 'enframing' provides the only way to achieve this modern epoch's 'unconcealment', by means of 'ordering' or 'summoning' of the world as the 'standing reserve' to be manipulated (cf. Verbeek 2000: 284-6). Instead, Ihde adheres to an ontic level in his explication of technology and its possibilities concerning the lifeworld, in other words, by examining technological artefacts and the way they 'shape' or mediate our access to reality. These 'ways of access' to reality (which Ihde focuses on) is a reduced way of revealing (Verbeek 2000: 288,289).

The 'ways of access' or mediation by means of technology also differ in the way that we engage with technology in a relational way. Ihde examines these different ways of access to reality that technology makes possible as variations of structural relations between humans and machines in terms of the Husserl-Heidegger intentionality correlation. The human – machine relation could be an embodiment relation, in which the artefact or machine is incorporated into the body schema, while extending one or more of the body's senses through which the world is directly perceived. The invariant aspects of the structure of the embodiment relation are that the artefact becomes partially transparent, that my experience is transformed in this relation and that, as Ihde says, a simultaneous sensory-extension-reduction relation occurs by means of the technology in use.

The second variation in human-machine relations is hermeneutic relations that require an interpretation by the person within this relation. Hermeneutics in philosophy initially applied to

the social sciences, in the field of theological textual interpretation. On the basis of Heidegger's notion of hermeneutics, Ihde explicated his conception of hermeneutics in detail by 'expanding' hermeneutics to include the domains of technology and of the natural sciences. Ihde's account of a technical hermeneutic relation shows that the perception ends with the machine as the machine interprets some aspect of the world, which is then relayed in some form (as text, symbols or codes).

In turn, the user has to interpret the data in order to understand that aspect of the 'real' world which the machine interprets. The person's experience is of the machine itself. The complexity of these relations increases in Ihde's explications, especially in TL and BT, where he shows how, with the increasing complexities in technological advances, the boundaries between humans and 'non-humans' or the 'other' (in alterity relations in which we interact with machines) become blurred by the use of metaphor.

In all technical relations, as Ihde shows us, we only become aware of a specific machine or instrument when it malfunctions, and is thus perceived as a present 'absence'. In a functioning state, technology exists on the fringes of our awareness as an 'absent' presence, and we have no direct contact or interaction with these background technologies.

Lastly, Ihde describes horizonal phenomena in which he includes bio-technologies in their various functions and forms, which do have an influence on our perception of our lifeworld, in addition to being a determining factor in the transforming our lifeworld. In many cases, horizonal phenomena can or may be 'repositioned' within Ihde's structural human-machine relations when the technologies are differentiated into conventional artefacts and imitation technologies.

Ihde's concept of embodiment includes the Foucauldian notion of objectified human bodies and the role politics and technology play in the techniques of normalizing bodies. (I expand on this aspect in the next chapter.) In his first book, Ihde already alludes to two 'levels' of embodied perception which he distinguishes as 'micro- and macroperception' by means of the correlating 'body one' and 'body two'. Some technological praxis has been transferred through generations and cultures and has become embedded in our lifeworld, for example, geometry in Western thought.

I have commented on similarities and differences between the phenomenological approaches used by Ihde and Merleau-Ponty to ascertain their views of the interrelations between human beings and their technologically or culturally textured lifeworlds. Ihde has expanded on Merleau-Ponty's notions of embodiment relations with artefacts and habit acquisition and on his ideas about how our perception and experience of our lifeworld are changed by means of technology. In the acquisition of skills and in the lived body's gearing and opening toward the world lies a deeper fundamental intentionality - existence – which is the manifestation of an intertwining between myself, others and the world which is meaningful.

At the level of pre-reflective experience, embodied intentional consciousness is the power which enables the projection of various possible worlds and experiences around us. Creativity, invention and imagination are all made possible by means of my body's symbolic and objective functions, which are underpinned by a certain bodily 'understanding' of the world.

Technology is a medium by means of which we understand and get to know about our world; individuals and societies are the collective medium through which these technologies and knowledge are transmitted through time and space. Humans and our world are intertwined and are of the same 'flesh' that shows the mutual implication of our creations and the lifeworld which is made possible by means of it. Merleau-Ponty's notion of the structures of the body-subject (in perception and experience) and its relation with the inter-subjective lifeworld remain

unchanged. Ihde's structure of human technical relations in experiencing the world also remains unchanged through time and place and can be made applicable to informing the theory and practice of disciplines in humanities and the natural sciences.

## Notes

1. 'Facticity', a Heideggerian term, means 'thrownness' (cf. Heidegger, [1953] 1996, §35). Our facticity therefore means that being which is in the mode of being-in-the-world.
2. Merleau-Ponty draws an analogy between communion in Christian practice and the integration of the senses.
3. The significance of the body schema or body image in Merleau-Ponty's phenomenology is his appropriation of the body image that he soon developed into the notion of a dynamic (bodily) motility that requires the body to be placed in the world in order to be examined as an entity in its own right (Macann, 1993:173,174). (As already explained, empiricism and intellectualism could not regard the body as such.)
4. Husserl's view, (cf. *N*:74) ' … I live in my body, and by means of it I live in the things' was re-defined and developed by Merleau-Ponty. The latter's conception of the body-subject as being-in-the-world, and later the intertwining was implicitly Merleau-Ponty's way to express that 'we live our bodies'; 'we live our world', although he used the term inhabit to indicate the body-subject's relation to space. In this sense 'we live space'.
5. Bakker implicitly refers to Merleau-Ponty's description of the acquisition of habit(s).
6. All biblical references in this study are to the New King James version (1982).
7. Malraux suggests that signification occurs where we subject the given elements of the world to a 'coherent distortion'; and style makes signification possible. It is necessary that we understand the origin of signification in order to understand any other creation or culture (PW: 58,60).
8. Edward Casey is well-known for his explications of Merleau-Ponty's concepts of space, memory and embodiment. I found his arguments insightful, especially on these aspects of Merleau-Ponty's philosophy
9. I owe this definition of habit to Wolff.
10. Notably the idea that a language is about differentiating between signs and 'thereby constructing a linguistic universe'; that the signs themselves do not have meaning unless they are related to other signs. The meaning of signs therefore lies in their differentiation from other signs which form a system (Matthews 2002: 17).
11. This stable disposition is what Bordieau calls *habitus* (cf. Wolff 2009b), which Bourdieu ([1972] 1977: 78) defines as that which produces individual and social practices; which is 'the product of history, [the *habitus*] produces individual and collective practices, and hence history, in accordance with the schemes engendered by history'.
12. Merleau-Ponty uses the words 'grip' and 'hold' to explain the body-subject's intentional structure; its 'I can' intertwined with the world. I shall refer to this notion again later in relation to the conception of geometry. I do not, however, mean to create the idea that the world is a thing (out there) which I have to manipulate. It is rather a metaphor (which Merleau-Ponty uses in PP (77) to describe the psychic and physical conditions that gear into each other) which can be applied to how our bodies and worlds gear into each other, which requires adjustments, for instance, acquiring new habits in order to interact with less effort.
13. Brey (2000a: 48) argues that there is tension in Ihde's work in terms of the different notions of embodiment relations which is to be resolved by returning to Merleau-Ponty's original account how embodiment relations are developed, and to serve as a proto-theory for an extended version of different kinds of embodiment relations which includes Ihde's notions thereof.
14. In PP (152), Merleau-Ponty says: 'Learning to find one's way….with the stick, which [is] an example of a motor habit, is equally an example of perceptual habit. Once the stick has become a familiar instrument, the world of feelable things recedes, and now begins….at the end of the stick.'
15. Because there is a certain constancy in our world, we can get a certain grip on it. As Merleau-Ponty says: '[There is] a certain energy in the pulsation of existence which prevents us from treating [the world] as an act of consciousness' (PP: 80).
16. The constructions of a drawing of a triangle (to use an example) 'possess a demonstrative value because I cause it to emerge from the dynamic

formula of the triangle. It expresses my power to make apparent the sensible symbols of a certain hold on things, which is my perception of the triangle's structure' (PP: 386). Kockelmans (1970: 289) explains that space and perception constantly refer me to my existence and contact with the world that is older than my thinking.

17. Cf. Hickman (2008: 99-103). Mitcham (1994: 75) describes Dewey's idea of tools being extensions of the human body.

18. Especially when viewed from Mauss's perspective on bodily techniques and Bourdieu's notion of 'habitus' (cf. Wolff, 2009b: 1-15). Richard Sennett's (2008: 149-78) chapter on the hand is also an exemplary explanation of body technics.

19. Although he explicitly refers to PP regarding embodiment and perception, Ihde makes a similar error to that made in traditional psychology. By remaining in the objective stance by compartmentalising the perceiving human body and perception, Ihde neglects the lived bodily existence as already meaning-giving and open for further experience and perception through the body's 'I can' instead of the third person approach.

20. Ihde defines *praxis philosophies* as those philosophies that 'in some way make a theory of action primary. Theory of action precedes or grounds a theory of knowledge' (TP: xv).

21. The etymology of the word *technē* refers to its classical context. *Technē* is a Greek word which means Art, skill or a regulated method of making a thing. It also means craft, cunning and sleight (of hand); the means whereby things are gained, know-how; trade; a work of art which is linked to *poiēsis* (*techto* means to work); artefact (ET: 32). Technics goes deeper than its etymology. It refers to an aspect of action. It has seven characteristics. First, it possesses a form of capable action which is directed at an aim. Second, it is the instrumental and methodical attempt to master or intervene in nature. Third, it represents a tacit form of knowledge (that may or may not be explicitly formulated) that involves a certain degree of standardization or method in the attempt to apply a mode of action. Fourth, it works on matter, objects, sources of energy, people, individuals, information or knowledge, for example, mathematics. Fifth, an intervention is made by something that supports it (a physical or intellectual tool). Sixth, its results take form in technical objects such as equipment, machines, methods, certain habits, institutions, organisations and other things. Seventh, the supporting tools or technical objects for mediation tend to form a socio-technical system – the social aspect of technics is important. Technics applies to all domains of life (Wolff, 2006). Wolff (2009a: 5) gives a comprehensive summary of technics: "Technics, then, is a complex consisting of three interdependent aspects: habitus (technical disposition of the technical agent), instruments or means (the system of technical objects and accompanying human procedures) and worldliness (the understanding interaction of the technical agent with the technical system). Human technicity as a whole, the nature of each of these three elements as well as the nature of their interaction, are always changing: it changes (1) whenever an individual child acquires skills that it didn't have as a new born baby and throughout his/her life in the acquisition of new skills or in the gradual loss of it; it changes (2) "naturally" over the whole of a cultural group during the process of civilisation (albeit sometimes at a slow trans-generational pace); but technicity also changes (3) in smaller or larger interventions in the "normal" flow of events, this is what nowadays happens most often under names like "development" or "transfer of technology."
Although Ihde emphasises the material aspects of technics in his earlier works, the material basis has socio-cultural historical aspects which are implicitly included. According to Agazzi (1998: 3), the characteristics of technics are parallel to those of 'episteme' in ancient Greece: episteme focuses attention on the truth of what is known; with *techné*, the focus is on efficiency. 'Episteme' concerns pure knowledge and usually contains a theoretical component while *techné* concerns knowledge of doing or making. (Agazzi 1998: 1-9)

22 In terms of Merleau-Ponty's philosophy, if the structures of pre-reflective primary perception (lived experience in the world as perceived in the natural attitude) are to be explicated, the phenomenological reduction is applied as we reflect on ourselves reflecting on our pre-reflective lived experience. Ihde differentiates between primary perception and the lifeworld (natural attitude), which are irreducibly interrelated.

23. Ihde's notion of micro- and macroperception is already mentioned in TP. It is worked out in more detail in his later texts. There are interesting analogies between Ihde's notion of micro- and macroperception and an inductive method for anthropological enquiry, in other words, micro- and macrotheory to examine the relations between primary worldviews through the ages and ethnological specificities (cf. Egenter, 1992: 25-36). According to Egenter,

the structures of the relations between primary worldviews and ethnological specificities are heterogeneous and 'oscillate' between positivistic empiricism and metaphysically deductive extremes. Due to discrepancies between the practical results of micro- and macrotheories, they fail to produce insights apart from historically recorded ideas on anthropology (Egenter, 1992: 61-71). Possible parallels may be drawn through further research.

24. Ihde parallels Kuhn's notion of paradigm shifts in science to technology and shows that Kuhn already alludes to the concomitant technological instruments that brought about the paradigmatic shifts in his explications of the 'new science' (cf. IR: 12-22).

25. Again, referring to Merleau-Ponty, all forms of perception are already meaningful, which makes perception of the world with or without the technological 'interference' non-neutral.

26. As explicated in TP, Ch. 1-4; ET, Ch. 3,5,7 & 9 and TL, Ch. 4-6.

27. In his later texts, Ihde replaces the word 'Human' with 'I'(cf. TL Ch 5), which might give us the notion of the body-subject and world interrelation as specific instead of a universal, anonymous and general, intentional and interrelational structure. My interpretation of Ihde's later texts is that they do not differ from his earlier texts in terms of the intentional structure between body and world as mediated through technology in its various relational structures with human beings. There are, however, expansions and more detailed descriptions and examples of certain aspects of his earlier work. He alludes to contemporary issues such as ethics, gender, politics and ecology, and relates them to his original structural explication of technology.

28. Such as the interpretation of 'artificial' by Massimo Negrotti as the imitation or reproduction (the result is 'man-made') of something that exists in nature. Negrotti (2002: 5) writes about 'the efforts of men who try to reproduce natural instances through "macrotechnology" strategies, on the basis of analytical models they build for such instances'.

29. Gadamer describes mimesis as representing the 'universal characteristic of human existence [which is] the never-ending process of building a world [the process in which] mimesis reveals the mystery of order as a tension between its potential and actual existence, which ultimately always points toward the ultimate order - the cosmos' (Vesely 2004: 289). According to Gadamer, '*mimesis* seems as valid now as it was in the past [and…] the re-enactment of cosmic order can be seen as the primordial form of making' (Vesely 2004: 289). Vesely (2004: 288) writes that mimetic-making occurs in ritual which precedes the formation of *technē.*

30. Cf. Wolff's (2009b) notion of de-contextualising and re-contextualising in terms of technology.

31. Ihde claims that anthropomorphism and the personalization of artefacts is problematic, but we tend to seek human qualities in machines, thus projecting aspects of ourselves onto them in order to relate to the machine as the 'quasi-other'. The boundaries between a non-human living 'thing' and a non-human artefact are blurred by the metaphor. Ihde does not explicitly refer to an ontology of the body in line with what Merleau-Ponty says; however, Ihde (2003: 11,12) clearly states that he replaces 'subjectivity' with Merleau-Ponty's notion of 'embodiment'.

32. Miller's (2005: 61-4) explication of technology and human 'collective intentionality' is, in my opinion, a better phenomenological explication of what Ihde is saying when he uses the term 'instrumental intentionality'. Ihde 'expands' hermeneutics to include technology and the natural sciences. Therefore, I think that 'intentionality' as the pre-reflective lived experience in the world cannot 'expand' to technology; rather, human intentionality can be mediated by technology or 'arch across' technology as a fundamental being-in-the world. Therefore, 'technological intentionality' appears to be meaningless.
I believe we are talking here of three different aspects of intentionality. Firstly, intentionality as described by Husserl and Merleau-Ponty as the pre-reflective intentionality of the lived body, the intentionality that supposes being-in-the-world. Intentionality also is consciousness directed at something. Secondly, Merleau-Ponty's notion of the 'intentional arc' is that which subtends our past, present and future, our perceptual life and our life of dreams and desires (our life of consciousness). Intentionality is contingent within a spatio-temporal context. Thirdly, what Ihde may imply with intentionality is that it is technologically embodied within the frameworks of cultural and the individual perception. The main difference here between Merleau-Ponty's and Ihde's notions of intentionality is that of pre-reflective 'being-in-the world' (Merleau-Ponty) and reflective mediated engagement with the world (Ihde).

33. If one considers the notion that technology extends aspects of our human body in embodiment relations - that, in hermeneutic

relations the locus of our intentional perception terminates beyond the artefact in the world, I find Ihde's notion of 'instrumental intentionalities' an anomaly, in that the focus is on the relational structures of humans and technology. Heidegger already implies that tools or technological artefacts belong to the specific 'work' contexts in which they function optimally and according to the intention designed by humans.

34. The more skilled one becomes in using or applying a technological instrument or artefact, the higher the chances are that the artefact will become transparent and incorporated into the body *schema*; Merleau-Ponty shows us that habit acquisition alters the body *schema* (PP**:** 143-5).

35. Cf. Wolff, 2009a, on 'technicity' and 'habitus'.

36 . Lévy-Bruhl distinguishes between 'primitive thought' and 'rational thought', claiming that 'primitive' thought has a logical system that differs from that of formal logic. The 'laws of thought' in formal logic are non-contradiction (A cannot both be A and non-A), the excluded middle (something is either A or non-A) and identity (A = A) (Dusek, 2006: 165). 'Primitive thought' identifies opposites and identifies the part with the whole and identifies a person with a totem or an object. Lévy-Bruhl suggests that primitive space is not organised like the space of geometry (Dusek 2006: 165), which Ihde explicates in the Western and non-Western techniques of navigation that were informed by and in turn informed different technologies.

37. Cf. CASA (Centre for Advanced Spatial Analysis) current research. http://www.casa.ucl.ac.uk/projects/projectDetail.asp?ID=63.

38. The notion of applying the second law of thermodynamics to the social sciences, as explicated by Illya Prigogine and others, in order to determine internal and external factors that influence social behaviour and the possibilities of manipulating these factors to such an extent that 'bifurcation' occurs from which new orders emerge, was explicated in my architectural studies (Viljoen, 1990).

39. Ihde alludes to this in (TP:90;) describing 'objective' distance that becomes relative in the 'quasi-immediacy of the television'.

## Works cited


Agazzi, E. 1998. From Technique To Technology: The Role Of Modern Science. *Techné: Research in Philosophy and Technology,* 4(2): 1-9. http://0-scholar.lib.vt.edu.innopac.up.ac.za/ejournals/SPT/v4n2/pdf/AGAZZI.PDF. Accessed on 7 February 2009.

Bakker, R. 1965. *Merleau-Ponty*. Utrecht: Het Wereldvenster/Baarn.

Bakker, R. 1977. *De Geschiedenis van het Fenomenologisch Denken*. Utrecht: Het Wereldvenster/Baarn.

Behnke, E. A. 1997. Body. *Encyclopedia of Phenomenology.* Lester Embree, Elizabeth A. Behnke, David Carr *et al*. (eds). Dordrecht: Kluwer. (pp. 66-71).

Bourdieu, P. 1977. (1972). *Outline of a Theory of Practice.* Trans. Richard Nice. Cambridge Studies in Social Anthropology. Jack Goody (ed). Cambridge: Cambridge University Press.

Botha, C.F. 2001. Heidegger: Technology, Truth and Language. Unpublished M.A. (Phil) thesis, University of Pretoria, Pretoria.

Brey, P. 1997. Philosophy of Technology Meets Social Constructivism. *Techné: Research in Philosophy and Technology*, 2(3-4):56-79. http://scholar.lib.vt.edu/ejournals/SPT/v2_n3n4html/brey.html. Accessed on 29 December 2008.

Brey, P. 2000a. Technology and embodiment in Ihde and Merleau-Ponty. In *Metaphysics, Epistemology and Technology,* 19: 45-58.

Brey, P. 2000b. Theories of technology as extension of human faculties. In *Metaphysics, Epistemology and Technology,* 19: 59-78.

Carr, D. 1987. *Interpreting Husserl: Critical and Comparative Studies*. Dordrecht: Martinus Nijhoff.

CASA (Centre for Advanced Spatial Analysis). Current Research. http://www.casa.ucl.ac.uk/projects/projectDetail.asp?ID=63. Accessed on 12 April 2009.

Casey, E.S. 1984. Habitual body and memory in Merleau-Ponty. *Man and World,* 17: 279-97).

De Jonge, B. 2002. Merleau-Ponty and environmental philosophy: some misinterpretations and possibilities. Unpublished MA thesis, University of Lancaster (UK). http://www.lancs.ac.uk/depts/philosophy/awaymave/onlineresources/dissertations.htm. Accessed on 2 April 2007.

Durbin, P. 2005. Philosophy of technology: in search of discourse synthesis. *Techné: Research in Philosophy and Technology,*10(2): 4-320. http://0-scholar.lib.vt.edu.innopac.up.ac.za/ejournals/SPT/v10n2/pdf/. Accessed on 7 February 2009.

Dusek, V. 2006. Philosophy of Technology: An Introduction. Boston, MA: Blackwell.

Eason, R. 2003. Hypertext: Rortean links between Ihde and Haraway. *Chasing Technoscience: Matrix for materiality.* D. Ihde & E. Selinger (eds). Bloomington, IN: Indiana University Press. (: 167-81).

Eason, R. *et al*. 2003. Interview with Don Ihde. In *Chasing Technoscience: Matrix for materiality.* D. Ihde & E. Selinger (eds). Bloomington, IN: Indiana University Press. (: 117-30).

Egenter, N. 1992. The Present Relevance of the Primitive in Architecture. *Architectural Anthropology research Series.* Vol. 1. Lausanne: Structura.

Fällman, D. 1999. Embodied systems: introducing general-purpose wearable computers. *Proceedings of the 22nd Information Systems Research Seminar in Scandinavia (IRIS 22)*: 'Enterprise Architectures for Virtual Organizations', 7-10 August, Keuruu, Finland. http://daniel-pc.informatik.umu.se/resources/papers/Fallman_IRIS99.pdf. Accessed on 24 May 2007.

Feenberg, A. 1996. *Heidegger, Habermas and the essence of technology*. http://www-rohan.sdsu.edu/faculty/feenberg/. Accessed on 18 October 2006.

Fletcher, B. 1967. *A History of Architecture: On the Comparative Method.* 17th ed. Revised by R.A. Cordingley. London: Athlone, University of London.

Foucault, M. [1976] 2004. *Society must be Defended: Lectures at the Collège de France, 1975-76.* Trans. David Macey. Arnold I. Davidson (ed). London: Penguin.

Frampton, K. 1985. *Modern Architecture: A Critical History.* London: Thames & Hudson.

Frampton, K. 1996. *Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture.* Cambridge, MA: MIT Press

Gordon, H. & Tamari, S. 2004. *Maurice Merleau-Ponty's 'Phenomenology of Perception': A Basis for Sharing the Earth.* Contributions in Philosophy, 89. Westport, CT: Praeger.

Hall, E.T. [1969] 1990. *The Hidden Dimension*. New York: Anchor.

Hass, L. 1999. Sense and alterity: rereading Merleau-Ponty's reversibility thesis. *Merleau-Ponty, Interiority and Exteriority, Psychic Life and the World.* D. Oklowski & J. Morley (eds). Albany, NY: State University of New York Press. (: 91-105).

Hass, L. 2008. *Merleau-Ponty's philosophy.* Bloomington, IN: Indiana University Press.

Hass, M. & Hass, L. 2000. Merleau-Ponty and the origin of geometry. *Chiasms: Merleau-Ponty's Notion of Flesh.* F. Evans and L. Lawlor (eds). Albany, NY: State University of New York Press. (: 177-87).

Healy, S. 2008. Air-conditioning and the 'homogenization' of people and built environments. *Building Research & Information*, 36(4): 312-22. http://dx.doi.org/10.1080/

09613210802076351. Accessed on 2 February 2009.

Heelan, P.A. 1988. *Space-Perception and the Philosophy of Science.* Berkeley, CA: University of California Press.

Heidegger, M. [1953] 1996. *Being and Time: A Translation of 'Sein und Zeit'.* Trans. Joan Stambaugh. Suny Series in Contemporary Continental Philosophy. Dennis J. Schmidt (ed). Albany, NY: State University of New York Press.

Hickman, L.A. 1990. *Technology as a Human Affair.* New York: McGraw-Hill.

Hickman, L.A. 2008. Postphenomenology and pragmatism: closer than you might think? *Technē: Research in Philosophy and Technology,* 12(2): 99-104. http://scholar.lib.vt.edu/ejournals/SPT/v12n2/pdf/hickman.pdf. Accessed on 9 March 2009.

Ihde, D. 1979. Technics and Praxis: A Philosophy of Technology. Dordrecht: Reidel.

Ihde, D. 1983. *Existential Technics.* Albany, NY: State University of New York Press.

Ihde, D. n.d. *Expanding Hermeneutics.* http://www.sunysb.edu/philosophy/research/ihde_6.html#{1}. Accessed on 18 October 2006.

Ihde, D. 1986a. *Experimental Phenomenology: An Introduction.* Albany, NY: State University of New York Press.

Ihde, D. 1986b. *Consequences of Phenomenology.* Albany, NY: State University of New York Press.

Ihde, D. 1990. *Technology and the Lifeworld: From Garden to Earth.* Bloomington, IN: Indiana University Press.

Ihde, D. 1991. Instrumental Realism: The Interface between Philosophy of Science and Philosophy of Technology. Bloomington, IN: Indiana University Press.

Ihde, D. 1993. *Philosophy of Technology: An Introduction.* Paragon Issues in Philosophy. New York: Paragon.

Ihde, D. 1997. Technology. In *Encyclopaedia of Phenomenology.* Lester Embree, Elizabeth A. Behnke, David Carr *et al*. (eds). Dordrecht: Kluwer. (: 690-3).

Ihde, D. 2002. *Bodies in Technology*. Electronic mediations. Vol.5. K. Hayles, M. Poster & S. Weber (eds). Minneapolis, MN: University of Minnesota Press.

Ihde, D. 2003. Postphenomenology – again? In *Centre for STS Studies Department of Information & Media Studies University of Aarhus.* Working paper No. 3. 2003. http://sts.imv.au.dk/arbejdspapirer.php. Accessed on 12 October 2008.

Ihde, D. 2008. Introduction: Post-phenomenological research. *Human Studies,* 31: 1–9. www.springerlink.com/index/G63577K106205834.pdf. DOI 10.1007/s10746-007-9077-2. Accessed on 12 October 2008.

Johnson, M.L. 1999. Embodied Reason. In *Perspectives on Embodiment.* Gail Weiss & Honi F. Harber (eds). New York: Routledge. (: 81-102).

Kearny, R. 1994. *Modern Movements in European Philosophy: Phenomenology, Critical Theory, Structuralism*. 2nd ed. Manchester: Manchester University Press.

Kisiel, T.J. 1970. Merleau-Ponty on Philosophy and Science. In *Phenomenology and the Natural Sciences: Essays and Translations.* Joseph J. Kockelmans and Theodore J. Kisiel (eds). Northwestern University studies in Phenomenology & Existential Philosophy. John Wild (ed). Evanston, IL: Northwestern University Press. (: 251-273).

Krois, J.M. 1983. Ernst Cassirers Theorie der Technik und ihre Bedeutung für die Sozialphilosophie. In *Studien zum Problem der Technik.* Phänomenologische Forschungen. Bd.15. Ernst Wolgang Orth (ed). München: Alber. (: 68-93).

Lévi-strauss, C. [1950] 2001. *Introduction to the Work of Marcel Mauss.* Trans. Felicity Baker. London: Routledge.

Matthews, E. 2002. *The Philosophy of Merleau-Ponty.* Ithaca, NY: McGill-Queen's University Press.

Macann, C. 1993. Four Phenomenological Philosophers: Husserl, Heidegger, Sartre, Merleau-Ponty. London: Routledge.

Madison, G.B. 1981. *The Phenomenology of Merleau-Ponty: A Search for the Limits of Consciousness.* Series in Continental Thought, 3. Lester Embree *et al*. (eds). Athens, OH: Ohio University Press.

Mallin, S.B. 1979. *Merleau-Ponty's Philosophy.* New Haven, CT: Yale University Press.

*Man made Marvels.* 2007. Television program. National Geographic. Discovery channels - Asia. Beijing & London. 27 June 2009.

Merleau-ponty, M. [1948] 1964. *Sense and Non-Sense.* Trans. Hubert L. Dreyfus & P.A. Dreyfus. Northwestern University Studies in Phenomenology & Existential Philosophy. John Wild (ed). Evanston, IL: Northwestern University Press.

Merleau-ponty, M. 1964a. *Signs.* Trans. Richard C McCleary. Evanston, IL: Northwestern University Press.

Merleau-ponty, M. 1964b. *The Primacy of Perception: and Other Essays on Phenomenological Psychology, the Philosophy of Art, History and Politics.* Trans. James Edie. Northwestern University Studies in Phenomenology & Existential Philosophy. James Edie (ed). Evanston, IL: Northwestern University Press.

Merleau-ponty, M. [1945] 1970. *Phenomenology of Perception.* Trans. Colin Smith (1962). London: Routledge & Kegan Paul.

Merleau-ponty, M. 1973. *Consciousness and the Acquisition of Language.* Trans. Hugh Silverman. Northwestern University Studies in Phenomenology & Existential Philosophy. James Edie (ed). Evanston, IL: Northwestern University Press.

Merleau-ponty, M. [1969] 1991. *The Prose of the World.* Trans. John O'Neill (1973). Northwestern University Studies in Phenomenology and Existential Philosophy. Claude Lefort (ed). Evanston, IL: Northwestern University Press.

Merleau-ponty, M. [1942] 1995. *The Structure of Behaviour. Trans. Alden L. Fisher (1963).* Pittsburg, PA: Duquesne University Press.

Merleau-ponty, M. [1964] 2000. *The Visible and the Invisible. Followed by Working Notes.* Trans. Alfonzo Lingis (1968). Northwestern University Studies in Phenomenology and Existential Philosophy. Claude Lefort (ed). Evanston, IL: Northwestern University Press.

Merleau-ponty, M. 2003. *Nature: Course notes from the Collège de France.* Trans. Robert Vallier. Northwestern University Studies in Phenomenology & Existential Philosophy. James Edie (ed). Evanston, IL: Northwestern University Press.

Merleau-ponty, M. [1948] 2004. *The World of Perception.* Trans. Oliver David. London: Routledge.

Miller, S. 2005. Artefacts and Collective Intentionality. *Techné: Research in Philosophy and Technology,* 9(2): 52-67. http://0-scholar.lib.vt.edu.innopac.up.ac.za/ejournals/SPT/v9n2/pdf/miller.pdf . Accessed on 21 April 2008.

Mitcham, C. 1994. Thinking through Technology: The Path between Engineering and Philosophy. Chicago, IL: University of Chicago Press.

Morris, D. 2004. *A Sense of Space.* Suny Series in Contemporary Continental Philosophy. Dennis J. Schmidt (ed). Albany, NY: State University of New York Press.

Morris, d. 2008. Body. In *Merleau-Ponty: Key concepts.* R. Diprose & J. Reynolds (eds). Stocksfield: Acumen. (pp. 111-120).

Negrotti, M. 2002. *Naturoids: On the Nature of the Artificial*. Hackensack, NJ: World Scientific Publishing Co.

Palmer, R.E. 1969. *Hermeneutics: Interpretation Theory in Schleiermacher, Dilthey, Heidegger and Gadamer.* Northwestern University Studies in Phenomenology & Existential Philosophy. John Wild (ed). Evanston, IL: Northwestern University Press.

Poincaré, H. 1897. *The relativity of space. Science & Method.* http://www.marxists.org/reference/subject/philosophy/works/fr/poincare.htm. (: 1 -14) . Accessed on 22 April 2005.

Rooney, K. (ed). 1999. *Encarta World English Dictionary.* London: Bloomsbury.

Scheibler, I. 2000. *Gadamer: between Heidegger and Habermas.* Lanham, MD: Rowman & Littlefield Publishers.

Verbeek, P. 2000. The thing about technology. *Metaphysics, Epistemology and Technology,* 19: 281-99.

Verbeek, P. 2001. Don Ihde: technological lifeworld. *American Philosophy of Technology.* Trans. Robert N. Crease. H. Achterhuys (ed.) Bloomington, IN: Indiana University Press. (: 119-46).

Verbeek, P. 2005a. The Matter of Technology: A Review of Don Ihde and Evan Selinger. Chasing Technoscience: Matrix for Materiality. *Techné: Research in Philosophy and Technology,* 9(2): 123-7. http://scholar.lib.vt.edu/ejournals/SPT/v9n2/pdf/verbeek.pdf. Accessed on 28 May 2007.

Verbeek, P. 2005b. *What Things do: Philosophical reflections on Technology, Agency and Design*. University Park, PA: Pennsylvania State University Press.

Vesely, D. 2004. Architecture in the Age of Divided Representation: The Question of Creativity in the Shadow of Production. London: MIT Press.

Viljoen, M. 1990. The Recycling of the Capitol Theatre. Unpublished B.Arch. thesis, Department of Architecture, University of Pretoria, Pretoria.

Viljoen, M. 2009. The body as inhabitant of built space: the contribution of Maurice Merleau-Ponty and Don Ihde. Unpublished MA(Phil) thesis, Faculty of Humanities, University of Pretoria.

Wolff, E. 2005. *Phénomenologie de la Perception – Orientation.* Lecture notes, Philosophy of Mind module (FIL 253). Unpublished text. University of Pretoria.

Wolff, E. 2006. Philosophy of Technology module lectures (FIL 754). Class notes taken by M. Viljoen. Dept. of Philosophy. University of Pretoria.

Wolff, E. 2009a. 'Habitus - means - worldliness. Technics and the formation of civilisations' (forthcoming in *Civilisations, Axial times, Humanisms*, Oliver Kozlarek, Jörn Rüsen & Ernst Wolff (eds), 2010).

Wolff, E. 2009b. 'Technicity of the body as part of the socio-technical system: the contributions of Mauss and Bourdieu', accepted for publication in Theoria, 2010.

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