Corporeal Virtuality: The Impossibility of a Fleshless Ontology

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While distinct terms, body and technology will always necessitate their interdependent consideration as a relationship. Likewise it becomes increasingly difficult to talk about bodies and technologies as separate entities – and therefore similarly to separate theories of technology from theories of our embodiment.

Eugene Thacker

Critical and popular discussions of virtual reality and cyberspace increasingly deny the corporeality of these technological ensembles, positioning them as new media of disembodiment. Well-known cyberspace figure Jaron Lanier claims: "[cyberspace] is just an open world where your mind is the only limitation" (Woolley, 1992: 14); cyber-theorist Michael Heim suggests "in cyberspace minds are connected to minds, existing in perfect concord without the limitations or necessities of the physical body" (Heim, 1993: 34); John Perry Barlow hyperbolises "it's like having had your everything amputated" (Barlow, 1990: 42). This discourse of disembodiment is manifest most extremely in Gibsonian representations of cyberspace, where embodiment is vilified as an unfortunate and flawed barrier against achieving – as Vicki Kirby suggests – a post-corporeal subjectivity configured in purely informatic and immaterial terms (Kirby, 1997: 135). Gibsonian cyberspace refers to that defined by cyberpunk novelist William Gibson, specifically in his novel Neuromancer (1984). In his coining of the term, Gibson describes it as a "consensual hallucination" experienced by billions of disembodied computer operators (Gibson, 1984: 51). While Gibson's work is clearly science fiction, his concepts have influenced computer and information systems design, and characterise the exaggerated claims made about cyberspace...
in both popular and critical discourse. The most significant aspect of Gibsonian
cyberspace, in relation to our own argument, is its representation of the
possibilities of disembodiment facilitated by virtual systems, to the extent that the
mind is seen as pure data able to leave the body behind. Within this hierarchical
framework the body exists as a lower-order mechanism, 'the meat', which is
distinguished from an ontologically superior and potentially autonomous mind. In
particular, we are concerned with the underlying implication that the corporeal is
*non-necessary*. Many of the actual technologies supposedly facilitating this
disembodied condition do not yet exist, but this has done little to discourage
hopeful renditions of the fleshless ontology of cyberspace, highlighting the
recursive relation between science fiction and techno-criticism.

The logic of a disembodied post-corporeality is a logic permitted by
(neo)Cartesian metaphysics. Cyber-enthusiasts, like those mentioned above, work
from an implicit and often unacknowledged epistemological framework provided
by the Cartesian mind/body split. This dualist ontology maintains a split model of
subjectivity allowing the denigration and final exclusion of the body in VR
discourse and experience. It should be noted, however, that cybertheory and
Cartesian metaphysics cannot be so simply equated, for while Cartesianism may
lay the ontological and epistemological groundwork for post-corporeal theory, in
the Cartesian model the body nonetheless does retains a *necessary* (although
marginalised) epistemological role. In the Cartesian understanding of selfhood,
the body provided a convenient and very compelling 'container' for identity. i.e.
one body, one identity. Although the mind could be distinguished from the body,
it nevertheless 'belonged' to a body, one body, from birth to death. Though the
self might be complex and mutable over time and circumstance, the body
provided a stabilizing anchor, a place of containment.

Cybertechnologies, however, have provided a context for the reworking of this
Cartesian understanding of the self. Where in Descartes' thinking the body served
to spatially limit the self, the singularity of which was guaranteed by the physical
containment of the mind in the body, in cyber-discourse there is an increasing
acceptance of the idea that not only are selves separate from the body, they are
not limited and determined by the mind's containment in the body, or to put it
another way, the mind or consciousness can somehow escape the body's
containment. This entails a radical interpretation of Descartes, one that maintains
the distinction of mind and body, but claims that consciousness is potentially a
condition not predicated upon having a body.

The teleology of cyberspace, or the end towards which it progresses, is all about
the final non-necessity of the body, or achieving a mode of existence that can do
without the body. Proponents of more recent cybertheory argue that on-line user-
subjects are unencumbered by problematics arising from the context and
messiness of embodiment, and are free to create identities and participate in
communities that are raceless, classless and genderless. i.e. without bodies. As we
will argue, however, cultural theorists need to question this desire to transcend
the body, on both political and ontological fronts. Allucquere Rosanne Stone is
one such theorist who does warn of the politically fraught nature of forgetting
about the body, when typically it is the bodies of others that risk exclusion and
effacement in this process:

> Forgetting about the body is an old Cartesian trick, one that has
> unpleasant consequences for those whose bodies are silenced and
> whose speech is silenced by the act of our forgetting; that is to say,
those upon whose labor the act of forgetting the body is founded – usually women and minorities (Stone, 1993: 113).

As an antidote to this utopian anti-corporeal discourse Stone reminds us of our inevitable return to the physical, insisting that "no matter how virtual the subject may become there is still a body attached" (Stone, 1994: 111). This argument begins an important critique of the discourse of disembodiment, by highlighting the necessity of embodiment as (the) ground for knowledge and experience. However, as Kirby (1997) suggests, "Stone's concession that we must inevitably return to the physical implies that at some point we successfully took leave of it" (139). Stone assumes rather unproblematically that the subject can simply be detached from the body-as-housing. Her previous warnings of the inherent dangers of an uncritical acceptance of Cartesianism, become limited and problematic considering that her own argument is itself permeated with a predictably binarised conception of mind and body, where consciousness can be unproblematically split from flesh and uploaded onto the network. Consequently, like the cyber-discourses from which she attempts to disengage, Stone returns to those unspoken assumptions embedded in the Cartesian mind/body split, in particular, of a subjectivity encapsulated by a mind which delimits reliance on the body i.e. as a life-support mechanism and not as an epistemic condition.

Although Stone does theorise the necessity of the body, she at most offers a partial and ultimately unsatisfactory treatment of embodied knowledge. In other words, she implies that while bodies may be necessary, they are not essential. Our distinction here between necessary and essential is fundamental to the central argument of our paper. Each word – in philosophical terms – has been used to convey a highly specific set of meanings in relation to bodies and subjectivities. When it is argued that the body is necessary, as we find in the Cartesian model of subjectivity, and by extension in Stone's argument, the body nevertheless can continue to occupy a marginal or passive epistemological position; that is, it is necessary for existence but not fundamental to knowledge production. Essentiality, however centralises embodiment as a condition of knowledge, experience and perception. In order to counter both the extreme anti-body theorists, and the more nuanced argument presented by Stone, it is necessary to find an alternative to the Cartesian dualist ontology altogether. Arguing for embodiment as essential to being and knowing in the world – as Merleau-Ponty does with his notion of the body-subject – is a significant beginning to this process and thus to challenging discourses of disembodiment.

The main project of this paper, then, is to counter the disembodying proclivities of cyber-discourse with a materialist, somatological approach to existence and the production of knowledge. As such, we will work towards a materialist theory of agency, and argue that both knowing and being are always-already embodied, and that embodiment is also always-already instrumental or 'toollic.' Organon, in fact, is the Greek word for tools or complex of tools, thus we would suggest that the organic is a priori contaminated by the idea of the technical. In terms of agency, this reinstatement of the corporeal and the material-technical also implies that knowledge is partial and situated, i.e. embodied and equipmental. Knowledge boundaries – exactly that which designates the object or body as such-and-such a thing – are made in uncertain collusion with the very materiality and recalcitrance of both the soma and the res extensa. Insisting on the imbrication of somatics and instrumentality is partially a reaction against, and backhand critique of, recent claims that cyberspace and virtual reality have made possible disembodied post-corporeal identities. It involves not only re-establishing the significance or value.
of the body with-out the Cartesian formula of mind/body dualism, but a complex rethinking of the nature of subjectivity and agency themselves. By essentialising the corporeal, we will suggest that subjectivity and the body are not divisible, and that to attempt such dualism – even heuristically – is a faulty theoretical strategy. The attempt to collapse dualist ontology involves more than the reconciliation of two seemingly oppositional terms. The theorisation of an embodied subjectivity is crucially a relational ontology – a generative and non-dichotomous understanding of being and experience; in this way it will disrupt neo-Cartesian representations of knowledge common in descriptions of cyberspace.

In order to explore a more viable and uncompromised approach to discussions of virtual reality and subjectivity, we will use a phenomenological perspective. Phenomenology, via both Merleau-Ponty and Heidegger, not only prioritises the body as epistemic condition of knowledge, but can also situate technics or equipmentality in primary relation with that body, as mutually imbricated in the processes of knowing and perception. Both Heidegger and Merleau-Ponty develop a latent "phenomenology of instrumentation" (Ihde, 1990: 40) and thus lay the potential groundwork for a promising reconfiguration of agency in relation to high technology.

Merleau-Ponty, in particular, challenges dominant neo-Cartesian models of subjectivity, by highlighting the a priori coincidence of consciousness and the body i.e. abandoning the mind/body dualism in favour of the notion of a 'body-subject'. As Cathryn Vasseleu argues, Merleau-Ponty does more than choose between two terms, which would simply preserve the dichotomy; mind and body are not "reducible to their parts," and the body is never simply object or subject (1998: 22). The body-subject is also the pivotal concept in his perceptual/sensorial and artifactual epistemology: the corporeal schema or lived experience of bodily spatiality is 'extendible' through artifacts. Merleau-Ponty abandons the founding premise of Cartesian dualism, which as we argue, has misinterpreted the ontological trajectory of virtual reality. Thus it is his recuperative concept of the body-subject, its inherent ambiguity and irreducibility, that provides the theoretical catalyst required to refute the notion that disembodied knowledge is virtually possible.

Merleau-Ponty has in fact been one of the crucial starting points for contemporary theories of embodiment. In particular, phenomenology and Merleau-Ponty have proved to be potentially productive allies for a group of contemporary Australian feminist theorists (Grosz, 1995; Vasseleu, 1998; Gatens, 1996; Diprose, 1994). This theoretical convergence is largely motivated by contemporary feminism's obligation to interrogate the dichotomous thinking which both underpins and impedes current debates concerning the relation between gender and biological sex. By invoking Merleau-Ponty's paradigm of embodied experience, feminists seek a way out of the ontological reductionism of dualist epistemology that confines an understanding of agency to the social and the biological, the natural and the cultural. This feminist engagement with phenomenology has worked to reveal considerable limitations in Merleau-Ponty's method. Indeed, the confluence of corporeal feminism and phenomenology highlights the context-specific conditions of an embodied subjectivity which conventional phenomenological accounts exclude and overlook. That is, while Merleau-Ponty essentialises the role of the body in our subjectivities, he doesn't give sufficient consideration to how bodies are lived out in their multiple and often turbulent specificity; that is, their inevitably cultural, social, historical, gendered, and technological, corporeal context or being-in-the-world. While the
primary concern for feminist theorists may be the affirmation of a distinctly sexed or gendered corporeality, it will be our contention that, in highlighting the specificities of sexed subjectivities, feminist intervention has been integral in foregrounding and re-cognising a palimpsest of cultural, social and historical specificities.

The phenomenological body

My body is the greatest extent what everything is: a dimensional this.
It is the universal thing.
Maurice Merleau-Ponty

Cartesian metaphysics is founded on the corresponding dualisms of the mind and body, the subjective and the objective. As Vasseleu comments, within this paradigm the core of human subjectivity is imagined as an isolated ego; a disembodied thinking substance able to view the body-machine from a rational and objective distance (Vasseleu, 1998: 51). This bifurcation of being into dichotomously opposed characteristics thus prescribes a model of existence premised on ontological difference, a subject distinct from the world and the body. Merleau-Ponty contests this model of human existence. For him the body is the essential condition and context through which the subject is articulated in the world and by extension the originary and primary source of meaning and expression; a subject of perception and experience as well as of cognition and reflection. Merleau-Ponty re-establishes this fundamental connection – the inescapable coincidence of self and world, with the body as the condition of that coincidence – through a reassessment of perception. As Vasseleu states:

For Merleau-Ponty perception is a creative receptivity rather than a passive capacity to receive impressions. This creativity is an activity that is inseparable from its corporeality; likewise incarnation in the world is inseparable from its capacity for such activity (Vasseleu, 1998: 24).

To be a subject is to have a world, and the way of having a world which is fundamental and inescapable to us all "is my perceiving it from where I am, with my senses ... I am always open to the world in this way" (Taylor, 1989: 3). The body is not simply a material location from which we perceive, a distantiated object; we experience things through our bodies not in a separate relationship to it. By positioning perception as a fundamental corporeal reality, rather than the result of the action of a disembodied thinking mind, Merleau-Ponty consolidates corporeality as an essential (and not simply necessary) condition for the production of knowledge.

Merleau-Ponty re-configures the relation between self and world through an analysis of perceptual experience as something inseparable from its corporeality. In short, thought or consciousness is inseparable from perception, and in turn perception is inseparable from the particularities of one's body. Abandoning objective notions of embodiment in favour of an account of embodied experience, by arguing for an essential corporeally-defined perception, allows us to go beyond the restricted conceptual structure of the subject/object dichotomy, by stressing a synaesthetic and pre-objective relation of the body to the world. Our bodies are not retractable, nor reducible to objects we can stand back from and reflect upon. On the contrary, embodiment is the schema by which the subject is articulated in-
the-world, the condition and context through which relations between me and other things become possible. Merleau-Ponty thus challenges the notion of the human subject as made up of two ontological modalities, the mind and body, which extricates consciousness from its *embodiment* in the world. In order to override the subject/object dichotomy, he offers the more primary and generative notion of the body-subject, a term which stresses the originary *co-incidence* of consciousness and the body (Macann, 1993: 176).

Thus, Merleau-Ponty illustrates how the refusal to acknowledge the corporeal reality of perception in the tradition of philosophy has relegated the body and the modes of perception which take place through it, to two seemingly opposite, yet equally unsatisfactory positions. That is, the position of an independently 'accessible' object from which responses are directly elicited, where bodies have a purely *causal* role in perception, or, inversely, where perception is seen as simply the result of our 'senses'; the action of an internally-derived disembodied thinking mind, which animates an inert body (Vasseleu, 1998: 21). In a bid to escape this dualist ontology – without resorting to reductionism, which simply privileges one of the binary terms at the expense of the other – Merleau-Ponty attempts to understand the necessary co-implication of consciousness and nature; the process of articulation between subject and object, inside and outside, the biological and the physical. One of the ways in which he explores this inherent interrelatedness or interplay between these previously incompossible terms is with the concept of the *corporeal schema*.

The concept of the corporeal schema or body-image attempts to confront and explain the unbridgeable gulf; that excluded middle that lies unexplained and unaccounted for in the Cartesian mind-body dualism. Rather than ignoring how these two apparently incompatible substances work in tandem, Merleau-Ponty takes this 'middle-space' or *entre-deux* as the centre of his phenomenological project. As Vasseleu comments, his "challenge to metaphysics begins with the development of the concept of the *entre-deux*, or the 'in-between two' which brings the excluded ground of oppositional terms into play" (1998: 22). In order to accomplish this re-conceptualisation, Merleau-Ponty asks us to set aside our prejudices of both science and common sense by asking us to reflect on the consciousness of lived experience. That is, our body-in-action; how we actually move our bodies and do things, and how this interaction occurs in everyday existence. He directs us to the different relationship that we have with our body in comparison to other objects, arguing that a consciousness of one's body is not experienced as an objectifiable thing in itself, as the Cartesian model infers. It is not "seen as a mere object by me", "I am not in front of my body... I am in it, or rather I am it" (Merleau-Ponty, 1962: 107&150). An important part of this experience of the unified relation to my body as a whole, is the implicatory or synergistic structure between the organs of the perceiving body (Bernet, 1993: 59). As Merleau-Ponty suggests:

> Body parts are related in a peculiar way... they are not spread out side by side, but enveloped in each other... they form a system, not a mosaic of spatial values. Similarly my whole body for me is not an assemblage of organs juxtaposed in space. *I am in undivided possession of it* and I know where each of my limbs is through a 'body image' in which all are included (Merleau-Ponty, 1962: 98).

This body image accounts for 'bodily knowledge'. That is, the way in which an
Yet, the way that we experience a sense of "undivided possession" in relation to our own body, in that our different organs form a synergy and "tend toward the realization of the same goal", we also experience in relation to objects and space. Thus, there is a kind of automatic and responsive anticipatory mobilisation of the body in relation to a specific situation, a "basic intentionality" that defines the human situation in the world:

Consciousness is in the first place not a matter of 'I think that' but of 'I can'. Sight and movement are specific ways of entering into relationship with objects. . . . it is the momentum of existence, which does not cancel out the radical diversity of contents, because it links them to each other, not by placing them under the control of 'I think', but by guiding them towards the intersensory unity of a 'world'. Movement is not thought about movement, and bodily space is not thought of or represented. . . . movement and background are, in fact only artificially separated stages of a unique totality (Merleau-Ponty, 1962: 137-8).

This implicatory structure points to the expandable and inherently plastic nature of the body; its aptitude for incorporative activity and morphosis. As Elizabeth Grosz points out, the body-image or corporeal schema accounts for the body's capacity to be open to, and intertwined with the world, enabling the integration or incorporation of seemingly 'external' objects into our corporeal activities (Grosz, 1995). Merleau-Ponty illustrates this pliable and malleably extendable nature of the body-image through our ability to incorporate tools or "fresh instruments" thereby opening up new configurations of embodiment:

The blind man's stick has ceased to be an object for him, and is no longer perceived for itself; its point has become an area of sensitivity, extending the scope and active radius of touch. . . . In the exploration of things, the length of the stick does not enter expressly as a middle term. There is no question here of any quick estimate or any comparison between the objective length of the stick and the objective distance of the goal to be reached. To get used to hat, a car 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 dilating our being in the world, or changing our existence by appropriating fresh instruments (Merleau-Ponty, 1962: 143).

This experience of one's body-image or corporeal schema is not fixed or rigid, but adaptable to the myriad of tools and technologies that may be embodied. This further reinforces the phenomenological claim that our body is not limited by the boundaries of the skin, but rather that we are always open to and intertwined with the world. This explains why instruments can be transplanted or incorporated into our corporeal activities and projects, ceasing to remain external to us – becoming as it were aspects of our phenomenological body. The instrument is taken into perceptual bodily experience, and becomes a part of my now altered bodily experience in the world. From this, it is clear that Merleau-Ponty's description of embodiment and the nature of corporeality amounts to nothing less than an outright rejection of the disembodied Cartesian subject. In particular, his recuperative concepts of the body-subject and the body image or corporeal schema – their inherent ambiguity and irreducibility – are crucial theoretical concepts which have helped to frame the "corporeal turn" in much recent theory.
So far we have appealed to Merleau-Ponty's theory of embodied subjectivity in an attempt to transcend, or at least think through, the resilient binary distinctions between embodiment and technology, subject and object, nature and culture. In Merleau-Ponty's relational ontology, the body is the primary condition of knowledge and experience. However, we have also suggested that Merleau-Ponty's methodology could benefit from a dialogue with corporeal feminism and, in particular, from an ontology configured as both relational and variable.

In her work, Gail Weiss (1999) suggests that bodies, body images and body image ideals are continually situated and validated by a culture's 'imaginary' which actively privileges and naturalises some forms of human corporeality and marginalises and excludes 'Others' (Weiss, 1999: 66-67). Weiss is attentive to the ways in which individual bodies bear the mark of an inter-locked multiplicity of material differences and are thus correspondingly particularised and (de)valued according not only to their sex, but also to their race, ethnicity, age, class, disability and technological environment. Weiss focuses on the normative, non-neutral and inter-corporeal aspects of body images – that is, how the formation of an historically configured, hierarchically structured economy of bodily ideals imposes normative and regulatory parameters in which the individual's corporeal schema or body image is expected to uniformly and un-problematically fit (Weiss, 1999: 27). Within corporeal feminism – and feminism more generally – the very notion of a singular or universal model of the body is itself a central and defining problematic. By recognising and emphasising the concrete specificities of bodies, feminist theory has increasingly enabled the conceptualisation of a plurality of mobile and fluid 'body types'. Weiss in particular draws our attention to the non-neutral, open-ended, historically and socially contingent character of the body (image). In so doing, she supplements more conventional phenomenological accounts of perception which characterise embodiment and the body image as trans-агентic and supposedly neutral.

Accordingly, her more extensive discussion of the body image is taken-up with foregrounding and unraveling how the body image is necessarily implicated in "sustaining individual, social and political inequalities," and also correspondingly how, as an "ongoing site of cultural contestation", the body image is also open to potential re-inscription and transformation:

"Exploring the corporeal possibilities that have been foreclosed by a given culture's own imaginary itself helps bring into being a new imaginary - one that does justice to the richness of our bodily differences ... [W]e must in turn create new images of the body, dynamic images of non-docile bodies that resist the readily available techniques of corporeal inscription and normalisation that currently define 'human reality' (Weiss, 1999: 67).

This provides an important and highly relevant theorisation of corporeal transformation, an idea which becomes central in the context of human-technology relations (Weiss, 1999: 10). Knowledge of our bodies is technologically mediated and our perception is instrumentally embodied, both in the sense that tools assimilate and materially impinge upon our field of perception, and in the sense that as environmental probes, sensory tools become virtually inseparable from what we would discern as our own perceptual and sensorial boundaries. As we will suggest, emphasising the corporeal-instrumental...
embodiment of knowledge becomes particularly imperative when critiquing technologies of virtuality.

**VR: Developing a Critical Literacy**

The aims of many who are investigating virtual environments are being directed toward the legitimation of fantasies of disembodied mastery and eradicated corporeal limits. But this fantasy is bound to the bodies it excludes

*Cathryn Vasseleu*

Cyberspace is a generic term, which has been mobilised in relation to a wide variety of technologies and phenomena, some of which are commonly available, and some of which remain largely fictional, like the virtual reality (VR) systems depicted in the film's like *The Lawnmower Man*. All can be characterised as electronic mediums which share the common ability "to simulate environments within which humans can interact" (Featherstone & Burrows, 1995: 3). These range from the electronic networks of everyday familiar technologies of the telephone, internet and even banking machines, to the more advanced and hyperbolised forms of cyberspace, such as high-tech virtual reality applications, which are designed explicitly to produce a predominantly visual, auditory, tactile, and immersive sensory experience. The creation of a compelling sense of presence, where the user feels immersed in an alternate environment beyond the location of the physical body is an explicit design goal within VR. This is achieved by wearing specific technological prosthesis which provide the user with an enveloping sense of sensory s(t)imulation. The focus of this paper is specifically those more advanced forms VR. These are coordinated multi-media systems, which attempt to surround or immerse the body within an artificial sensorium of light, sound and touch, perhaps distinguishable from other forms of media in their use of technological exteroceptors such as stereo headphones, computerized clothing or data-suits, and head-mounted displays able to simulate three dimensions (Featherstone & Burrows, 1995: 7).

The desire to use media for physical transcendence or transportation beyond the location of the physical body, is not a condition unique to VR. In the course of media history, particularly in the period of early electronic communications, both the discovery of telephony and wirelessness were also expressed in terms of their immateriality and fluidity; as mediums which created new kinds of virtual communities, by linking a "multitude of minds" and allowing "millions of people to be present in the 'same' space" (Stone, 1994: 87). Like the rhetoric employed in discussions of VR today, they professed the same utopian desires, and introduced similar problematisations of notions of subjectivity, identity and presence (Dyson, 1996: 76). This points to the way in which understandings of VR are implicated in a familiar set of discourses about preceding technologies. The desire to create a sensation of presence is however more pronounced with VR technologies. Cinema for example may permit an illusion of participation, but VR is predicated upon it; furthermore VR apparati are us, they are not objects in front of us, they are part of the felt structure of our embodiments. Virtual Reality systems are definitively designed to foster a sense of immersion, with the implicit aim of creating a compelling sense of being in a mediated space other than where the physical body is located.
The dominant goal of VR is for users to feel themselves to be in a unified field of awareness similar to our lived phenomenological experience; to replicate as closely as possible a sensory environment that our body recognises. Ironically however, this same pursuit of sensory immersion or presence appears dependent on a disavowal of the corporeal, a disavowal made to seem possible by the Cartesian model of subjectivity. The apparent antagonism between the pursuit of de-corporealisation and a simultaneous reliance on the body's sensorium, is expressed in the rhetoric surrounding VR, where that sense of being-there, the illusion of being taken in that lies at the heart of the VR experience, can only be adequately imagined when measured against the locatable actual body, or perhaps in terms of our departure from it. An awareness of the physical body, and thus of a consciousness/body split, is thus quite crucial to the idea that VR is a disembodied experience.

Conversely however, the illusion of being fully taken in by cyberspace is also dependent on a disavowal of this split. As Vasseleu points out, we can only fully experience the virtual, that sense of "disembodied agency", because we are embodied (Vasseleu, 1994: 160). Disembodiment is only made feasible by drawing a sharp boundary between the stable and locatable Cartesian body and the virtual avatar, the latter defined as an exclusively cerebral and immaterial experience, by virtue of it occurring other than where the physical body is located. Much of the theoretical and social commentary surrounding VR implicitly depends on a reiteration of the mind/body dualism, which also functions interchangeably with a surfeit of other binaries and assumptions. In what follows we will attempt to tease out some of these tensions and contradictions, with the aim of illustrating the impossibilities of thinking of VR, or any techniques for that matter, as anything but corporeally constituted. This process will involve untangling chains of common sense associations that link mind, virtuality and information in opposition to the body, reality and materiality. We will illustrate how the discourse of disembodiment is dependent on a reiteration of the Cartesian mind/body distinction, an inherently flawed model of subjectivity, which when explored closely, seems peculiarly antagonistic to the goals of VR technology.

Merleau-Ponty's phenomenological approach and his insistence on the embodied nature of all knowledge is central here. This theoretical proposition, further developed and supplemented by corporeal feminism, provides the theoretical platform and leverage for a re-embodied theory of VR. As we observed, Merleau-Ponty not only rejected the disembodied ontology of Cartesian metaphysics by prioritising the body as epistemic condition of knowledge, but also situated tools or equipmentality in primary relation to that body (Richardson, 1999: 6). Crucially, then, in Merleau-Ponty's model of embodiment relations, tools are not conceived of as merely perceptual attachments or extensions, but rather are incorporated into our embodied field or corporeal schema. In this sense there remains a fundamental irreducibility between technologies and embodiment, and thus a correspondence between technics, the body, knowledge and perception. The phenomenological and corporealist approaches thus offer a particularly useful foundation for developing a model of embodiment relations which can account for the way in which the virtual is both a technological ensemble and always-already a corporeal condition. In other words, phenomenology and corporeal feminism provide the theoretical components for a model which understands VR not only in terms of its technological effects, but also in terms of a collaboration between the technology and our own sense of being and having a body.
As we have suggested, conceptualising cyberspace as an inherently disembodied medium relies on an unambiguous understanding of bodies, and bodily location. This perspective assumes that the body is limited and confined by its own materiality and physicality to a singularity of location and possible actions. The body becomes nothing more than location, an extended and passive substance reduced to an inert housing for consciousness. Testimonies that insist cyberspace is a disembodied medium thus work from a premise which assumes that because the body remains in front of the screen rather than within it (or at least extractable from the prosthesis), and the user experiences a feeling of presence outside the location of the physical body, that the body is extraneous and peripheral to this process. Moreover, such an assumption implies that the virtual is an other space which we can virtually enter. As Kirby argues, the purely physical is understood as necessarily separated from the purely psychical, the body of the screen acting as the neutral interface which mediates these two independent and self-evident entities (Kirby, 1997: 137). This understanding of bodies and presence clearly relies on a dualist ontology which imagines a subject essentially separated from her body, marginalising and excluding the body's formative role in perceptual processes and the production of knowledge, and making possible its conceptual erasure from the epistemology of the cyberspace experience. In addition, it neglects to address the primary realm of the lived-body, a phenomenological term which serves as a corrective to complacently regarding the body as an objective thing. Such complacency neglects to consider that our body is our originary and inescapable anchorage and opening onto the world, the means by which all information and knowledge is accessed and meaning generated. We live through our bodies, and through them we have access to space, not an homogenous a priori space, but an oriented space which is, in the Heideggerian sense, 'at hand'. All techniques are thus always-already techniques of the body, "there is no world without things or bodies", and this applies no less to the techniques of VR which are equally recipients of the body's projects and intentions (Bernet, 1993: 65). The virtual is not a parallel space that can exist outside the realm of embodied experience, because like [[real]] life it remains conceivable only insofar as corporeality provides the basis for our perception and representation of it (Grosz, 1995: 84). N. Katherine Hayles argues that the body in fact plays a crucial role in VR simulations, where "the specificities of our embodiments matter in all kinds of ways, from determining the precise configurations of a VR interface to influencing the speed with which we can read a CRT screen. Far from being left behind when we enter cyberspace, our bodies are no less actively involved in the construction of virtuality than in the construction of real life" (1996: 1).

Clearly then, a mapping of bodies and spaces that relies on objective accounts of the body presents the virtual as self-evident; an occupiable space that is vacant prior to our arrival. Yet, in fact, the way in which we understand spatiality (up, down, right, left etc) is very much in collaboration with various modes of embodiment. If we use technologies that alter our space-perception, our modes of embodiment are also affected; and vice-versa, so there is a continual interplay between 'space' and 'body'. 5 Quite clearly, we use spatial models of touring, mapping, topology and geometry, to 'locate' ourselves in cyberspace. As Lakoff and Johnson point out in Metaphors We Live By, "spatial or 'orientational' metaphors are the most common of all, ... which has to do with the fact that mental mapping is 'grounded' in fundamental bodily experiences (our perceptions of back, front, beside etc). Spatial metaphors arise 'from the fact that we have bodies of the sort we have and that they function as they do in our physical
So our embodiment then has a significant influence on how we perceive space - including cyberspace - while on the other hand, embodiment is in some sense 'medium specific,' in that our experience as embodied subjects is in part a condition of the technologies we use and the spaces they configure. So cyberspace is not a disembodied reality; it is a medium through which we experience a different kind of embodiment. i.e. cyberspace and VR do not offer us the possibility of disembodied reality, but rather, there have been significant cyber-technological effects on embodiment. Contesting notions of VR as a disembodying medium thus requires a shift from thinking of the virtual as de-corporealising subjectivity, toward an understanding of how the body incorporates the virtual; of how the virtual becomes an aspect of our embodiment, or conversely a corporeal virtuality. The VR apparatus can thus be transplanted or incorporated into our corporeal activities and projects, becoming an aspect of our phenomenological body. Virtual Reality tools cease to be something that we experience as objects and become part of the felt structure of our embodiment (Innis, 1984: 72).

 Included in the phenomenological notion of the body-image is also the concept of a 'fictional' or symbolic mapping of the body outside of, or beyond its neurological structure. As Merleau-Ponty states "[w]hat counts for the orientation of the spectacle is not my body as it in fact is, as a thing in objective space, but as a system of possible actions, a virtual body with its phenomenal 'place' defined by its task and situation." (Merleau-Ponty, The Phenomenology of Perception, 1962: 250 our emphasis) He argues that "our experiences are not organized by 'real objects' and relations but by the expectations and meanings objects have for the body's movements and capacities" (Grosz, 1994: 89). This notion of a fictional or symbolic element of the body-image is particularly useful in relation to VR technologies, which are themselves positioned as immaterial in relation to the objective actuality of our physical bodies, and thereby amputated from, and considered inconsequential for, real-world physicality. Emphasis is shifted from the nature of the objects themselves, to the relations or expectations, and spectrum of possibilities or corporeal projects that are made possible by this interaction:

In the action of the hand which is raised toward an object is contained a reference to the object, not as an object represented, but as that highly specific thing toward which we project ourselves. . . . to move one's body is to aim at things through it; it is to allow oneself to respond to their call (Merleau-Ponty, 1962: 139) (our emphasis).

In this revision, the components of cyberspace are thus meaningful objects for our perception; highly specific things 'towards which we project ourselves', which thus demand and incorporate the interventions and participatory operations of embodied agency. Cyberspace, as Vasseleu suggests, is not a transparent or neutral electronic medium or informational interface; it is a medium of participatory orientation between bodies and objects in different spaces (Vasseleu, 1994: 155). Re-mapping the relationship between bodies and objects in this way is thus involves a double displacement. To begin with it challenges the perspective which constructs the virtual as an a priori objective or parallel world, which can be perceived, or entered independently or displaced from our corporeality. However, redefining concepts of space and time in this manner, as
essentially corporeally constituted, simultaneously extricates the body from its role as passive housing or location for consciousness. That is, it reinforces the active and lived spatiality that corresponds to the relational notion of Merleau-Ponty's body-subject.

It is the material body that thus permits the virtual; it is the necessary and essential condition of experiencing the virtual. Embodiment provides the ground of virtual experience – not only in the basic sense that we use our hands and eyes to see the screen and use the keyboard, but also in the way we construct alternate identities, and perceive of virtual communities as places - our embodied experiences circumscribe the parameters of those perceptions and identities. Today, our increasing remote control of the world – what we call telepresence or telematics – indicates a need to rearticulate what it means to have a body, and the perceptual limits of that body. i.e. the 'corporeal schema' of the body is perhaps changing according to the perceptual augmentations provided to us by new technologies.

If, as we are suggesting, our own sense of embodiment is inseparable from such techno-cultural configurations, the question arises as to how VR specifically impacts on embodiment: what 'type' of body, or corporeal schema does VR produce? In the case, for example, of the Visible Human Project, VR technologies contribute to the increasing fabrication of the body as an internal landscape, which can be traversed, in the same way that we might move through an architectural landscape in a three dimensional virtual reality model. These traversable volumetric interiors actually use flight simulation software in their construction, so the parallel is more than metaphoric (Waldby, 2000a: 103).

The reciprocity between the body and the technology is also present in the technical specifications and development of the VR apparatus itself. Within the development of imaging technologies there is, as Ihde suggests a "dialectic between the instrument and the user in which both a learning-to-see meets an elimination-of-bugs in technical development" (Ihde, 1999: 178). In this sense design perfection of the technology is always developed in the context of ergonomic compromise and perceptual compatibility between human and machine (Ihde, 1990: 74). Thus the body (in the context of the agency of both the user-subject and the body-object) is built into the development of the technology, just as the arrangement of bodies in VR experience is in various ways regulated and disciplined by the technology (whether immersive or prosthetic).

In this paper we have attempted to problematise the way in which both cyberspace and VR are continually theorised as inherently disembodying mediums. We have illustrated how this discourse of disembodiment is dependent on a reiteration of the Cartesian mind/body dualism, an inherently flawed model of subjectivity which nonetheless remains an insidious and often unacknowledged framework in many of the writings on VR and cyberspace. In order to counter this discourse of disembodiment we have employed the work of Merleau-Ponty and corporeal feminism, and argued that like our lived phenomenological experience, the virtual becomes conceivable and perceivable only insofar as corporeality provides the basis for that perception. Perhaps more critically, we have suggested that the corporeal turn in recent theory, which has taken on the task of reinstating the body as actively participant in the production of knowledge, has undoubtedly reworked the epistemological foundation of the subject-object relation. For if the role of the body shifts from that of container to that of an agentic being-towards, then body-prostheses also become complexly integral to the making of knowledge.
Our own sense of embodiment, of the capacities of our bodies, their limits and abilities, their morphology and mutability, both informs and is informed by our tools. We are all corporeal-instrumental relational achievements, and VR is simply another instance of this relation.

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**Endnotes**

1. From the Greek soma meaning body, somata being the plural form. Back

2. Cathryn Vasseleu provides a succinct definition of what cyberspace and virtual reality are commonly understood to involve: "Cyberspace is the space within which the electronic network of computers from which virtual realities, among other things can be made. Virtual realities are computer generated systems which use cyberspace to simulate various aspects of interactive space (that is they are inhabitable computer systems of space)." (Vasseleu, 1994: 155) Back

3. For example, John Barlow, a founder of the "political action group called Electronic Frontier Foundation", expresses a common understanding of cyberspace. He defines cyberspace as "where you are when you are talking on the telephone". Cyberspace here, is little more than an extension of existing telephone systems accessed by computer and telephone users around the world (Featherstone & Burrows, 1995: 5). Back

4. We use 'prosthesis' here in the phenomenological sense. That is, the prosthesis is not an "attachment", but comprises, or is incorporated into, part of the body-image. Back

5. For example, contrary to the idea that surfing the web or chatting on the net is a sedentary, disembodied experience, when we talk about our 'location' in relation to the internet, we often use the discourse of touring and mobility, and experience the net as a conglomerate of 'places', 'sites' and communities. In Television and Common Knowledge (Gripsrud, 1999) Peter Larsen talks about the instrumental/corporeal connection in the use of various types of remote control. Once we overcome the non-proportionality of touch to effect (the mark of many tele-technologies), we use the remote as a navigational or mapping instrument. For example, if you use a remote that zaps through channels, eventually coming back to the first one, your experience of televisual space is likely to be as a topological terrain organised in a circle. Back
References


