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JEAN DU TOIT  
*School of Philosophy,  
North-West University  
jean.dutoit@nwu.ac.za*

GREGORY MORGAN SWER  
*Department of Social Sciences,  
Walter Sisulu University  
gregswer@gmail.com*

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# VIRTUAL LIMITATIONS OF THE FLESH: MERLEAU-PONTY AND THE PHENOMENOLOGY OF TECHNOLOGICAL DETERMINISM

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## *abstract*

*The debate between instrumentalist and technological determinist positions on the nature of technology characterised the early history of the philosophy of technology. In recent years however technological determinism has ceased to be viewed as a credible philosophical position within the field. This paper uses Merleau-Ponty's phenomenology to reconsider the technological determinist outlook in phenomenological terms as an experiential response to the encounter with the phenomenon of modern technology. Recasting the instrumentalist-determinist debate in a phenomenological manner enables one to reconcile the apparent dualism of the instrumentalist and determinist positions through Merleau-Ponty's ontology of the flesh. This ontology has recently been used to ground accounts of virtual embodiment. We argue that in addition to explaining away the classical form of technological determinism, it can also phenomenologically ground a novel understanding of technological determinism. Namely, a technological determinism of virtual embodiment.*

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## *keywords*

*Merleau-Ponty, technological determinism, philosophy of technology, phenomenology, virtuality*

**1. Introduction** The formative years of the field of the philosophy of technology are often characterised as a debate over the nature of technology between the opposing positions of instrumentalism and technological determinism. Broadly construed, technological determinism is the position that technology determines society. By this it is meant that firstly, technology is the prime determinant of the course of social change. And secondly, that technology is autonomous in the sense that it has its own internal developmental logic such that, if left to its own devices, there is a certain path that technological development will necessarily take independent of human intention. In short, technological determinists hold that there is something in the nature of technology that is beyond the intentions of its creators and the control of its users. Instrumentalist positions, on the other hand, eschew the possibility that technology might have its own teleology and powers of social determination. Such positions emphasise the instrumental nature of technology, stressing its relative value-neutrality and the key role played by the user's intentions in determining the ends towards which it is applied (Swer 2014). After the so-called empirical turn in the philosophy of technology, the field has been dominated by positions drawn from pragmatism, social constructivism and post-phenomenology (Brey, 2010). Modern forms of instrumentalist philosophy are in the ascendant, and determinism is no longer viewed as credible philosophical position (Du Toit & Swer, 2020; Peters, 2017; Swer, forthcoming). The tendency by contemporary philosophy of technology to dismiss technological determinism out of hand as uninformed or obscurantist has meant that little effort has been made to consider whether there is anything in the determinist account of technology that might be of philosophical merit (Du Toit & Swer, 2020, pp. 234-235). We suggest that, when considered from a phenomenological perspective, technological determinism can be seen as articulating a certain technological experience. When viewed in this phenomenological sense one can explore the experience that technological determinism expresses without endorsing its allegedly pessimistic attitude towards technological development or its essentialising tendencies. To this end, this paper draws upon the later philosophy of Merleau-Ponty, in order to reconsider instrumentalism and technological determinism from a phenomenological perspective. It suggests that both positions can be explicated as experiential aspects of complementary modes of being with technology, with instrumentalism relating to an embodiment mode, and determinism relating to a hermeneutic mode. The merit of viewing these positions from a Merleau-Pontian perspective is that it allows one to draw out the phenomenological bases of both positions. In addition, we argue, such an analysis reconciles these supposedly antagonistic positions

by demonstrating, through the example of digital technologies, that the hermeneutic mode is present in the embodiment mode, and vice versa. Instrumentalism and determinism then appear not as diametrically opposed theoretical positions, but as equally valid and complementary aspects of the phenomenological experience of human-technology relations. Having reinterpreted the classical technological determinist position as but one feature of broader technological experiential whole, we then suggest that another form of technological determinism can be developed from Merleau-Ponty's ontology of the *flesh*. Recent research into the phenomenology of virtuality (Irwin, 2014; Bailey, 2016; Hoel & Carusi, 2018; Ward, 2018; Du Toit, 2020; Du Toit, 2021) has drawn upon Merleau-Pontian phenomenology to explore the possibility of virtual embodiment. Such accounts have typically stressed the expansive features of virtual embodiment. We argue that the same Merleau-Pontian concepts that ground such accounts of embodiment in the virtual, can also ground a novel account of technological determinism. This determinism avoids the essentialist tendencies of classical technological determinism by remaining within the non-dualistic phenomenological framework provided by *flesh*, whilst also indicating the ability of the virtual to limit and determine the possibilities of the virtually embodied. Such an understanding, we suggest, can act as a corrective to the tendency to emphasise the expansive and liberating experiential aspects of digital technologies by drawing attention to the ability of technologically-mediated experience to diminish or constrain existential capacities.

The virtual should not be understood as related to the illusory, false, immaterial, or imaginary – nor as standing in opposition to the real, as Baudrillard's (1981) emphasis on the dichotomous relationship between reality and virtual reality suggests. As Pierre Levy notes, the virtual “is often meant to signify the absence of existence, whereas ‘reality’ implies a material embodiment, a tangible presence” (1998, p. 23). In contrast, following Levy, we view the virtual as “not a derealization (the transformation of a reality into a collection of possibles) but a change of identity, a displacement of the center of ontological gravity of the object considered” (Levy, 1998, p. 26). Thus, the virtual implies a detachment from the “here” and “now” (Levy, 1998, p. 27). In introducing the idea of embodiment we find a point of engagement, experiential in character, that serves to found the individual's engagement with the virtual by means of the digital technology artefact. Virtual embodiment is therefore suggestive of the idea that to thoroughly conceptualize the virtual, one must look towards both Philosophy of Technology (in terms of the digital technology artefact) and Phenomenology (in terms of the body-subject). There is thus, in describing the virtual, both recourse to the specific (in terms of individual artefacts) and to the general (in terms of the experiential encounter thereof by the individual).

Early works in the philosophy of technology are frequently placed within instrumentalist or technological determinist schools of thought<sup>1</sup>. Instrumentalists contend that technology is best understood at the level of the individual artefact, which is purported to be value-neutral (value-considerations applying only to issues concerning application). Determinists typically reject the view of technology as a neutral instrument of human volition, arguing rather that technology determines the course of societal development (to some degree).

## 2. Philosophy of Technology and Phenomenology

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<sup>1</sup> Lewis Mumford, Jacques Ellul and Langdon Winner are typically taken to be the three key technological determinist thinkers (Swer, forthcoming), although Merritt Roe Smith includes Herbert Marcuse, Martin Heidegger, Rene Dubos, Paul Goodman, Murray Bookchin, Kurt Vonnegut, David F. Noble and David Dickson as fellow travellers (1994, p. 28).

The recent turn<sup>2</sup> towards pragmatist and social constructivist modes of technological analysis has effectively enshrined the instrumentalist outlook as the default position for contemporary philosophy of technology. Technological determinism, on the other hand, was deemed pessimistic, totalising, or excessively substantive and is no longer viewed as a credible philosophical position. However, the rejection of technological determinism by mainstream philosophers of technology does not explain its former popularity or its hold upon the popular imagination. We argue that a Merleau-Pontian analysis of the phenomenological bases for both instrumentalist and determinist perspectives provides such an explanation, and can ground a phenomenological account of technological determinism as a form of inter-subjectivity, thereby broadening our understanding of the existential implications of the mediation of human experience by digital technologies.

Swier (2014), drawing on Ihde (1979), suggests that instrumentalism and technological determinism have phenomenological roots in forms of human-technology relations that can be described as either embodiment or hermeneutic relations. Embodiment relations describe the extension of the subject's perceptual field and are characterised by transparency as the subject experiences the world through the technology (and not technology itself). With hermeneutic relations technology-use becomes opaque, i.e. technology becomes the terminal point of the subject's experience (in contrast to extension of the subject's perceptual field). Swier suggests that the instrumentalist position is rooted in the phenomenological and embodied experience of technology. This human-technology relation is typified by the use of individual technologies, such as a cane or hammer. In such technologically-mediated praxis the artefact 'withdraws' and the user experiences technology as an extension of their bodily intentionality. Swier links technological determinism to hermeneutic human-technology relations that typify human interfaces within larger-scale technological systems. Technology at this level appears not as a neutral carrier of human volition but as a limit to it, an external object that must be interpreted – here the conception of technology as opposing human intentions becomes meaningful.

This analysis suggests that instrumentalism and determinism are grounded in equally valid, though opposing, experiences of technological praxis. In the next section we argue that Swier's (2014) phenomenological characterisation of the instrumentalism-determinism dichotomy may be enriched through engagement with a Merleau-Pontian perspective. Merleau-Ponty's phenomenology, we argue, can circumvent the agonistic dichotomy present in Swier's account by demonstrating that embodiment and hermeneutic relations are present in all forms of technological praxis.

**3. Technology and the Flesh: Beyond the Instrumentalism/Determinism Dichotomy**

The proto-theory<sup>3</sup> of technology presented in *Phenomenology of Perception* focuses on five specific technological artefacts: a feathered hat, a car, a blind man's stick, a typewriter, and an organ. The account of the blind man's stick is descriptive of both a motor habit (as one learns to use the cane) and a perceptual habit:

Once the stick has become a familiar instrument, the world of feelable things recedes and now begins, not at the outer skin of the hand, but at the end of the stick. ... the

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<sup>2</sup> See Achterhuis (2001), Brey (2010), Van den Eede, et al (2017), and Du Toit & Swier (2020).

<sup>3</sup> The account of technology given in *Phenomenology of Perception* does not constitute an encompassing argument on the nature of technology, as do the full-fledged theories of technology presented by philosophers of technology such as Mumford and Ellul. Rather, in the early work of Merleau-Ponty, the use of examples of technological artefacts (such as the blind man's cane and a woman's feathered hat) present an explication of his phenomenological reasoning concerning embodiment (Ihde and Selinger, 2004, p. 361–367).

stick is no longer an object perceived by a blind man, but an instrument with which he perceives. It is a bodily auxiliary, an extension of the bodily synthesis (Merleau-Ponty, 1962, pp. 175–176).

The blind man's stick reveals an instrumentalist perspective that is propounded throughout Merleau-Ponty's early technological thought, whereby a tool is incorporated into the body schema to become transparent while allowing for expanded perceptual and motor potentiality. This instrumentalist conceptualization of technology extends to Merleau-Ponty's examples of the car and the organ, whereby the artefact described becomes in some sense useful in the extension of the body-subject. The feathered hat and typewriter, in turn, illustrate how technology relates to the extension of the body through embodied skills, and that skilful use of an artefact is needed to utilize said artefact as an instrument for human use with specific ends. Again, this embodied mode of being with technology accords with the instrumental view of technology – the latter being sketched against a technological determinism that is rooted in the hermeneutic mode.

This changes in Merleau-Ponty's later work, with Carusi and Hoel noting that instruments, tools, and technologies seem to become a constant preoccupation of Merleau-Ponty's later thought, particularly in *The Visible and the Invisible* and his unfinished manuscripts and lecture notes (2015: 73). The instrumentalist perspective shifted as Merleau-Ponty's phenomenology matured, and we argue that his later concept of the *flesh* suggests a means to overcome the instrumentalist and determinist dichotomy regarding technology-relations. The *flesh* is an ontological concept that aims to overcome dualisms through the reconceptualization of such 'dualisms' as intertwining, chiasmically associated, and interdependent. Examples include world and consciousness, sensing and sensible, or technological artefact and the body (Merleau-Ponty, 1968, p. 123). The *flesh* suggests a reaching across of the world to the body-subject, and the body-subject to the world, via a 'space' of connection – a co-implicity.<sup>4</sup> It is argued that, in accounting for the co-implicity that always resides in the body-subject and in the world simultaneously, Merleau-Ponty may ground a new account of technologically-mediated experience. Such a novel account of technology, which will be illustrated through the example of digital technologies, suggests that ontologically the hermeneutic mode of technology relations is also present in the embodied mode, and that the embodiment mode is present in the hermeneutic mode. The later Merleau-Pontian account of technologically-mediated experience dissolves the dichotomy between technological instrumentalism and technological determinism that typified classic philosophy of technology. Furthermore, this account unifies both positions by arguing that the *flesh* explains our engagement with technological artefacts (objects in the world) as a mutual constituted experiential field. Understanding the co-implicity of body-subject and world by means of the *flesh* is also crucial for understanding the equating of tools and symbols in later Merleau-Ponty (in *Eye and Mind*). Merleau-Ponty describes both tools and symbols as technical objects, stating that: "Like all other technical objects, such as tools and signs, the mirror has sprung up along the open circuit *between* the seeing and the visible body. Every technique is a 'technique of the body,' illustrating and amplifying the metaphysical structure of our flesh" (1964, p. 6). Both tools and symbols are means by which experience of the world occurs, with a comparable

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4 Co-implicity is thus suggestive of the *sensorium commune* described in *Phenomenology of Perception* as the space of the intertwining of the senses "sometimes affected from one side, sometimes from the other" (Merleau-Ponty, 1962, p. 244). Whereas Merleau-Ponty's initial account of embodied perception is characterized by a movement towards incarnated meaning, his later work moves beyond sensory perception to extend into and to be constitutive of intellectual life (De Saint Aubert, 2008, p. 10, 14).

capacity to decentre the perceiving body (Hoel & Carusi, 2018). On the basis of this mutuality, Merleau-Ponty's *flesh* grounds a new account of technologically-mediated experience that, ontologically, consolidates and unifies the hermeneutic and embodied modes of technology relations in the body-subject through a mutually constituting experiential field.

**4. Technological Mediation as experiential and behavioural restriction**

While the *flesh* offers considerable resources for a more nuanced understanding of technologically-mediated experience, recent analyses of digital technologies that utilize Merleau-Ponty's phenomenology tend to focus on the seemingly utopian capacity of the virtual to generate expanded horizons and potentialities for action and experience – often disregarding the possibility of technological mediation as experiential restriction.<sup>5</sup> These analyses take up early Merleau-Pontian instrumentalism (artefacts as value-neutral tools), while disregarding the possibilities presented by the *flesh* for hermeneutic modes of being with technology.

Instrumentalist accounts sketch the use of the technological artefact as tool, but disregard the deterministic influence of the technological artefact itself. However, as the *flesh* shows, there is a hermeneutic mode of being with technology that should be emphasized – again, a crossing, a chiasma, an intertwining of sense and world. The *flesh* represents for Merleau-Ponty the genesis of sensibility, for “he who sees cannot possess the visible unless he is possessed by it, unless he is of it ...” (1968, pp. 134-135): just as there is encroachment between the two poles of the ‘dualisms’ that Merleau-Ponty identifies, so the world encroaches upon us and alters us – still, while we are of the world, we are paradoxically not *the* world (1968, p. 127).<sup>6</sup>

The mode in which technology mediates the body both expands and constrains the body-subject through the intertwining of body and the technological artefact. Thus, while one encounters the digital technology artefact through a bodily sensitivity and sensibility, through a sensory receptivity and a spontaneity, it should also be considered that the technological artefact can constrain and delimit the ways in which these aspects of the body schema may find expression in the virtual. In this paper we highlight how the hermeneutic mode, considered in relation to the virtual, reveals the manner whereby technological artefacts may exert a deterministic influence of concurrent expansion and constraint on the body-subject – particularly through its influence on individual behaviour.

Merleau-Ponty rejects purely mechanical, physiological, behaviouristic, and reflex-arc explanations of behaviour as restrictive and reductionist from *The Structure of Behaviour* onwards (Corriveau, 1972, p. 19). Behaviour is not, for Merleau-Ponty, merely the sum of its parts but relates to a certain milieu characteristic of the human being, a specific ‘being-in-the-world’ that is situational (Merleau-Ponty, 1963, p. 127). Both *Phenomenology of Perception* and *The Visible and the Invisible* expand on the intertwined relation between body-subject and world to suggest that behaviour relates to sensibility – a giving sense and a making sense of the world that precedes thought, representation, and formal symbolic activity and which takes place through intentionality to allow the body-subject to achieve a maximal perceptual grip on the world (Corriveau, 1972, pp. 22-23).<sup>7</sup>

5 See Irwin, 2014; Bailey, 2016; Hoel & Carusi, 2018; Ward, 2018; Du Toit, 2020; Du Toit, 2021. Other descriptions of the virtual, such as Pierre Levy's, are similarly suggestive of such expanded horizons for action and experience. Levy suggests that the virtual “is a fecund and powerful mode of being that expands the process of creation, opens up the future, injects a core of meaning beneath the platitude of immediate physical presence” (1998, p. 16).

6 The idea that the world is not merely an object “does not mean that there was a fusion or coinciding of me with it: on the contrary, this occurs because a sort of dehiscence opens my body in two, and because between my body looked at and my body looking, my body touched and my body touching, there is overlapping or encroachment, so that we may say that the things pass into us, as well as we into the things” (Merleau-Ponty, 1968, p. 123).

7 Behaviour thus transcends the merely physiological aspects of the body, while remaining bound within the limitations of the body.

Merleau-Ponty's description of behaviour (particularly as habitually learnt) links to Skinner's concept of operant conditioning, but we carefully note that there exists a fundamental incompatibility in terms of these two thinkers. However, both views find agreement in that they are based in the relational character of behaviour that does not presuppose strict linearity (Pompermaier, 2018). Learning, for Merleau-Ponty, occurs through the process of trying to achieve maximal grip on the world through intentional actions in embodied and socially contextualized situations (Jing & Ejgil, 2017). Learning as a being-in-the-world relates to sense-making of the structures of the world – it is the process of increasing grip (sensibility) on the world, whether in *actuality* or in *appearance*.

The idea of achieving *apparent* maximal grip on the world is important for analysing engagement with the virtual because the process of achieving maximal grip in the virtual differs from that used to achieve maximal grip within the spatiality of the material world. Rather, the structuring of digital technologies in line with rewards (through captological programming and Pavlovian mechanisms, for instance) convinces the individual of having achieved maximal grip on the virtual – certain ways of behaving in the virtual lead to a sense of reward, which in turn suggests that one has made sense of the virtual (achieved maximal grip). An example of such a technological positing of having achieved maximal grip is the captological technique of designing software applications in such a way as to continually notify users of content (such as recurrent Facebook notifications). These notifications might be a reminder of a birthday, an indication of someone having liked one's post, updates on public forums, or a direct message from a friend. The variance in meaning of each of these notifications allows the device to take on the characteristics of a slot-machine – one is never sure of what one is being notified, whether the notification is indicative of a public message on a topic one is interested in (small win), or a direct message from a friend (jackpot). In either case, once a specific behaviour has been enacted (the phone unlocked, the app opened) the potentiality of a notification is replaced with a certainty.

While the concept of *flesh* illuminates the hermeneutic mode of human-technology relations and resolves ontologically the determinism/instrumentalism dualism, the concordant embodied account of behaviour being reinforced through the mechanistic and predictable functioning of the digital technology artefact underlines the technologically deterministic capacity of the virtual to structure human behaviour – both fields of action and modes of perception are deterministically transformed and distorted. In the next section we expand our discussion of individual experience of the virtual towards a description of the social conditioning wrought by the virtual on a larger scale to show how values, systems of rationality, and thought are conditioned and limited in concrete ways.

In the philosophy of technology, analysis of the value-ladenness of technology tends to focus on the role that values play in technology design, or the ways that the operation of a technology enforces or restricts certain forms of behaviour. The classic example of an inherently political technology is the Moses bridge where a particular technological design was chosen to restrict access to the beaches by certain racial/socioeconomic groups (Winner, 1986, p. 21).<sup>8</sup> Analyses of virtual technologies rarely explore such 'deterministic' issues and

## 5. The Uniformity of the Virtual Bodily Schema

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<sup>8</sup> Winner describes how the low-hanging overpasses in Long Island were designed by architect Robert Moses to realize a specific social function. The specifications of these low-hanging overpasses deliberately prevented passenger buses (which typically served African-Americans and low income individuals) from passing underneath, while expensive automobiles (such as those owned by the wealthy) could traverse the roads with ease. Evidence from the period suggests that these bridges gave manifestation to Moses's racial bias and social-class discrimination (Winner, 1986, pp. 123-124).

tend instead to explore virtuality's expansion of experiential possibilities.<sup>9</sup> One reason for this neglect might be the apparent immateriality of the virtual. Instances of constraining technologies like the Moses bridge are decidedly material, in the sense of being tangible, and operate deterministically in an equally tangible way, by physically preventing the passage of certain types of vehicle along the bridge. The ostensible immateriality of the virtual appears to render it ontologically different from older technological forms and thereby immune to deterministic analyses that seem rooted in the concrete.

Merleau-Ponty's later phenomenology serves as a corrective to such dualistic treatments of the technological through the application of his ontology of the *flesh*, a matrix of intertwined and reciprocal relations that serves as the foundation of the body's relational engagement with its environs, to the virtual. A Merleau-Pontian analysis of virtual technologies grounds our experience of the virtual world in the body and connective lattice of the *flesh*. It unifies the virtual and the material, for the experience of the virtual arises in the space between the embodied subject and digital technology. The virtual and the 'real' are the same in that they are both experienced by an embodied subject who perceives and navigates within them through the employment of bodily frames of reference. Consequently, questions concerning technology's ability to constrain or limit asked of older, material technologies can also be asked of 'immaterial' virtual technologies. The individual's experience of technology is as embodied in the 'real' world as it is in the virtual. If the virtual is to be described as concrete in this embodied manner, then the virtual is as concrete as the material (i.e. no dichotomy exists) and the concepts utilized in philosophy of technology (such as technological determinism) are equally applicable.

Phenomenological analyses of digital technologies that employ Merleau-Ponty's work (e.g. Irwin, 2014; Bailey, 2016; Hoel & Carusi, 2018; Ward, 2018; Du Toit, 2020; Du Toit, 2021) tend to focus on the ways in which the virtual extends perceptual capacities. However, we argue that in order to remain true to Merleau-Ponty's principle of reversibility one is committed to considering the technologically-mediated experience of the virtual world both ways. Not just with regards to the experiences of the embodied subject 'touching' the virtual, but also with regards to the ways in which the virtual 'touches' the embodied subject. In considering the virtual as enmeshed in the *flesh*, we recognise an interfusing of specific properties that relate to one's embodied encounter with the world and the virtual.

The virtual world, understood as a 'concrete' space, is one that is layered with values. The subject embodied in the virtual finds their range of possibilities thoroughly circumscribed, sometimes by physical limitations of the technology and sometimes by constraints designed by those who create and maintain the technology. Online behaviour is as norm-governed as offline behaviour.<sup>10</sup> And for all that the virtual can radically augment human perceptual and expressive capacities, the procedures for such augmentation are rule-governed. Navigating the virtual requires an implicit grasp of technological rationality. The virtual is "a distributed system where bodies, symbolic systems, technologies and environments are intertwined and in which phenomena are articulated in characteristic ways, according to particular styles" (Hoel & Carusi, 2018, p. 62). And praxis in the virtual world is as formative of patterns of thought and behaviour as praxis in the material world. The analysis of measurement and the body can flesh out an account of the deterministic effects of the virtual on the embodied subject.

Paul Virilio sketches the phenomenological dimensions of the transferal of standards of measurement from the virtual to the material world. Analysing the shift in spatial and

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<sup>9</sup> Cf. Pierre Levy, *Becoming Virtual* (1998).

<sup>10</sup> Floridi (2015, p. 264) argues that in the post-digital era no separation exists between the two dimensions.



temporal experience that occurred with the rise of what he terms “computer-assisted representation”, Virilio stresses the role of measurement in founding our ability to experience the world (1991, p. 51). Being embodied in the virtual, Virilio suggests, means acquiring a system of orientation radically different from that of material spatio-temporality, one that obliterates distance and positionality. He further argues that the spatio-temporal orientation acquired in the virtual is then transported into the non-virtual, facilitated and reinforced by the increasing incorporation of virtual technologies into work and leisure activities.

On Virilio’s account the virtual and non-virtual form a continuum with no clear boundary. As more forms of praxis are mediated by virtual technologies, the application to the material world of norms and orientations derived from the experience of virtual embodiment proliferates. And the result is a “delirium of interpretation due to the excess of mediation of experiences”, a state in which it becomes increasingly common to experience social reality within the interpretative framework of the virtual (Virilio, 1991, p. 48). Thus, praxis becomes increasingly technologically-mediated even when it does not directly involve the use of technology.<sup>11</sup> Returning to Merleau-Ponty, we further suggest that alterations in the experiential framework by which we measure and engage the world, virtual and material, in turn produce alterations in the self-understanding and capacities of the embodied subject, which itself is the ground of all measurement.

As Hoel and Carusi suggest, regarding Merleau-Ponty’s thought in *The Visible and the Invisible* (1968) and *Nature* (2003), the body is considered the “standard or measure of things” whereby “‘measurement’ [becomes] an ontological concept that concerns the inner scaffolding of the existential field, the ‘invisible armature’ of the perceived” (2018, p. 48). The body is intertwined and complicit in phenomena, which is of particular relevance to any analysis of the virtual that explores the expansion or constraint of body schemas via technological mediation.<sup>12</sup> The measuring body emphasizes “the mediated nature of knowledge and being, by more radically integrating mediating artefacts into the perceptual/conceptual complex” (Hoel & Carusi, 2018, p. 49). Hereby a relative autonomy is intuited with regards to symbols and tools, which through their operation “serve to decentre and displace the interrogating capacities of the perceiving body in productive ways” through the expansive dynamic of the *flesh* (Hoel & Carusi, 2018, p. 49).

The body as measurement (i.e. the perceiving body reconfigured into a symbolically and technologically disturbed and mediated measuring body) highlights how both symbols and tools serve as ‘measures of being’ (Merleau-Ponty, 1973, p. 124). Merleau-Ponty argues “my body is not only one perceived among others, it is the mesurant (*mesurant*) of all, *Nullpunkt* of all the dimensions of the world” (1968, pp. 248–9). It is against this concept of the measuring body that the relation of the body-subject to the world makes sense, and whereby behaviour becomes understandable as meaningful in a larger unified whole (rather than as momentary and fleeting). Movement and behaviour, through the world and through the virtual, are elucidated through the *flesh* wherewith the measuring body is known – and due to the delimiting and structuring effects of the virtual, behaviour is structured according to the confines of the digital technology artefact’s functioning.

In this regard it is sensible to, in a manner of speaking, turn Hoel and Carusi’s postulation of the measuring body around to trace not the influence of the body-subject on the world, but

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11 Cf. Mark B.N. Hansen, particularly *Bodies in code* (2012) and *Feed-forward* (2015).

12 Hoel and Carusi describe the measuring body as a “new conceptual tool” that “neither privileges nor coincides with sensory perception. It acknowledges that technoscientific interrogations of the world involve distributed and displaced agencies of observation that engage in a two-way formative exchange between observer and observed” (2018, pp. 47–48).

rather to trace the measuring effect of the technological artefact. The technological artefact, in delimiting and funnelling being, functions in a technologically deterministic manner. In other words, the measuring artefact, rather than merely broadening the body-subject's horizons of engagement by means of the virtual, generates a uniformity of body schemas by structuring experience and behaviour along predictable and linear lines of influence – the digital technology artefact functions in a manner similar to technological artefacts in a broad sense (as suggested by technological determinism). This means that engagement with the virtual happens in a consistent manner because the specific digital artefact can only ever function in a similar manner regardless of the wide variety of individuals across a society, or between societies, that make use of it – thus, such devices structure human perception and behaviour in an expected and predictable manner. Often, the structuring effects of the measuring artefact entail capitalistic, advertising and consumerist agendas – and it is these criteria that are emphasized, rather than the expansive and creative potentialities inherent in said technology.

Merleau-Ponty's phenomenology makes allowance for a plurality of lived world(s) and suggests that these worlds are not monadic (1968, p. 48, 62, 84, 269; 2002, p. 210, 214). The body of the body-subject is where sense is made of space and things, but the body is also already interrelated to other body schemas by means of the *flesh* as an interworld. The *flesh* of the virtual, the point at which the body-subject and the digital technology artefact intermesh, makes this interworld concretized and linked; lived bodies are unfurled unto each other by means of the structure of technological mediation (which allows expansion of the body, while also curtailing and delimiting this unfurling along capitalistic lines). From the individual's behaviour one may therefore explicate a collective element to behaviour across society – for “as soon as something is taken as expressive there is a carnal communicability to it, and with that an ‘opening to generality’” (Hoel & Carusi, 2018, p. 56). Technological systems are thus “standards or measures of being, which have the capacity to transform the metaphysical structure of the interrogating apparatus and hence to displace the horizons of the perceptible/intelligible world” (Hoel & Carusi, 2018, p. 62). The virtual, in concretizing intersubjective relations, serves to structure and delimit (whilst expanding and opening up) human perception and behaviour according to the strict criteria of the ‘measuring artefact’. Furthermore, the rethinking of the virtual presented here allows one to explicate the formative and transformative capabilities of technological tools, symbols, and cultural forms of expression by means of the virtual (at the individual and broader cultural level). Bodily schemas that are contorted by the virtual are linked to wider intellectual/cultural patterns to such an extent that the technological flattening of schemas is likely to have an impact at a cultural level too: Shared symbols in the virtual lead to a uniformity of bodily schemas and suppresses (but never extinguishes) the body's capacity to displace established horizons of meaning.

**6. Conclusion** An opening up of Merleau-Ponty's early instrumentalist account of technology to the broader experience of technological praxis by means of the *flesh* reveals that both embodied and hermeneutic relations are concurrently found in the individual's encounter with technological artefacts. Such a recognition allows one to phenomenologically validate the experiential insight into different aspects of human-machine relations that underlies both instrumentalist and technological determinist positions, whilst resolving their apparent antagonism by showing both positions to be correct but partial descriptions of technologically-mediated experience.

We also argued that a Merleau-Pontian account of virtual embodiment opens up the possibility of developing a novel form of technological determinism. This new determinism,

like the classic form of technological determinism, is grounded in the bodily experience of the technologically-mediated subject. It, however, does not reinforce the instrumentalist-determinist dichotomy that Merleau-Ponty's ontology of the *flesh* was used to dissolve, but rather uses this ontology as the foundation of its account which focuses on the relations between the Merleau-Pontian body-subject and digital technology. The elucidation of such a technological determinism reveals a capacity of certain technologies to constrain or restrict the experiential and behavioural potentialities found in the technologically-mediated existential field. To this end we have reconsidered the relation of the body-subject and the virtual, illustrating the ways in which digital technology artefacts may at once open up new horizons of experience while also concretely determining values, systems of rationality, and thought.

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