Border Crossings

The Technologies of Disability and Desire[1]

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When conventional disability studies encounters cultural theory, it generates what is now usually referred to as critical disability studies (CDS). Unlike the social model, which focuses on the structural inequalities of Western societies that are seen to produce disability, or at least cement it, CDS is a diverse entity that encompasses both material and discursive underpinnings, the psycho-cultural imaginary as much as law and social policy, and the phenomenology of the individual embodied subject as well as any identification with a sociological category. Critical disability studies is, in my view, inherently interdisciplinary in its scope and significance and must engage with the full range of what cultural studies – among other areas – has to offer rather than limiting itself to the narrower range of socio-political concerns. In this it moves away from the more familiar focus on rights, entitlements, and autonomy to encompass a complex analytic approach that goes well beyond mere description of how it is to be disabled. At the same time, cultural studies – like feminism before it – will benefit enormously from recognising that disability just is one of those intersectional modalities that cannot be separated out for discrete study as though its implications were fully contained within the material condition of those with anomalous embodiment. These are not just contact zones, but border crossings where bodies of knowledge inflect and disturb one another in what we can understand as highly productive ways. Within such a context, and as a body theorist, I shall focus especially on what is at stake in some aspects of human corporeality in the era of postmodern biotechnologies, technologies, that is, which have the capacity to not simply reorder morphological forms but to transform them.

1 | This essay draws on previous work in *Dangerous Discourses of Disability, Subjectivity and Sexuality,* chap. 6 (Palgrave Macmillian, 2009) and part of "Re-imagining Embodiment: Prostheses, Supplements and Boundaries" (*Somatechnics* 3.2, 2013).

In Western modernity, the reassuring, and yet fundamentally illusory, image of the Cartesian body as the unified, unchanging material base of continuing existence has long held sway, but is now radically challenged, not only by postconventional models of theoretical enquiry which are the concern of the few, but more materially and disturbingly by a range of contemporary bioscientific developments that pervade cultural understanding at every level. At precisely this juncture, the disabled body can raise acute questions about the always ambivalent relationship between embodied subjects, culture and biotechnology. While for nearly all of us, our bodily engagement in everyday life is always already technologically inflected, for many people with disabilities the relationship is an inescapable dimension of practical embodiment, not least in the use of prosthetic supports. But where in conventional usage the term prosthesis has intended some material object that compensated for a perceived lack or failure in embodiment, the emphasis now has turned to enhancement and supplement. Regardless of whether prostheses operate externally as conventional 'replacements' for missing limbs, or internally as with pacemakers or even transplanted organs, in all cases the endeavour to restore the clean and proper body paradoxically undermines our faith in an intrinsic corporeal integrity. In exposing instead the inherent plasticity of the body and its multiple possibilities of transcorporeality, and in incorporating non-self matter, such modes of morphological transformation can comprehensively undo the conventional limits of the corporeal self. Taking initially a phenomenological approach to the lived experience of prostheticized life, I shall move by way of Jacques Derrida's insights into prosthetic supplementarity and his re-imagination of corporeal boundaries to the Deleuzian understanding of embodiment as necessarily entailing assemblage. For Gilles Deleuze, assemblages mobilise an expanded notion of desire which inevitably queers not just sexuality but conventional models of embodiment in general. They speak to border crossings not as the passage from one realm to another but as the criss-crossing imbrication that productively disrupts all meanings. More importantly, in their respective work, both Derrida and Deleuze understand the dis-organisation of traditional bodily being as a matter not of nostalgia for lost certainties, but as the occasion for a potentially celebratory re-imagining of the multiple possibilities of corporeal extensiveness.

The current academic concern with the notion of prostheses builds on a lay fascination – not least on show during the Paralympics of 2012 – with the ubiquity and availability of technological interventions that seem to indicate new ways of being human. But before suggesting that such a move would demand radical reconfigurations of the concept of 'human' itself, let me first contextualise the word 'prosthesis' in its historical emergence. Clearly the use of mechanical aids to enhance bodily functionality or appearance extends right back to the Classical world, but the term itself (derived from the homologous

Greek word meaning 'addition') first appeared in English in early eighteenth century medical texts, where it was used to denote the "replacement of a missing part of the body with an artificial one" (Wills 215). As so often, the initial significant developments were driven by military issues, particularly following the rehabilitative treatment of mass casualties in the American Civil War and the two world wars. As David Serlin ("Engineering") makes clear, prosthetics in the Second World War were used to re-normalise the disabled male body, and he positions prosthetic practice as operating within "the fiercely heterosexual culture of rehabilitation medicine, especially its orthodox zeal to preserve the masculine status of disabled veterans" (Serlin, "Crippling" 170).[2] Similarly, the success of mid-century civilian prosthetics was often measured in professional literature by the extent to which they enabled the wearer to engage in normal gender activities like dating, dancing and ultimately marriage (see Ott). At those levels, the use of prostheses can be understood as therapeutic in both a medical and cultural sense, but the sense of enhancement – the crossing of the boundaries of the normative body – was never entirely absent. As early as the inter-war period in Europe, the emergence in Germany of the New Man took off from the rehabilitative goal of 'recovered' veterans, but introduced the notion of prostheses as offering something superior to the natural body (see Biro; Neumann).

More recently, contemporary critical cultural and body theory has deconstructed the initial definition of prostheses as functional replacements to evoke a sense in which the interface of biology and technology is a matter not of instrumental expediency but of a deep ambiguity. Prostheses are at once material artifacts and scaffolds of semiotic meaning where – in both the original, uncomplicated sense, and in the complex discursive notion – the infinite confusion of contact zones between the human, animal and machine plays itself out most tellingly. Like Donna Haraway's cyborg which once pushed the limits of embodiment in its imaginative daring, the prosthetic body troubles the binaries of the organic and inorganic, the natural and artificial, therapeutic and enhancement, male and female, and ultimately self and other. Speaking of the 'illegitimate fusions of animal and machine,' Haraway writes: "These are the couplings which make Man and Woman so problematic, subverting the structure of desire, the force imagined to generate language and gender, and so subverting the structure and modes of reproduction of 'Western' identity" (Haraway, "Manifesto" 176). Though Haraway has long since abandoned the cyborg as such, she indicates how the human/machine interface that conventional biomedical prostheses inevitably speak to can be pushed much further in both scope and meaning. Contemporary

2 | See also Serlin ("Crippling") for the surprisingly counter-normative possibilities of masculine prosthetic performativity.

critical cultural scholarship plays with the idea that we are all always already prosthetic. As disability theorists David Mitchell and Sharon Snyder put it, "the prostheticized body is the rule, not the exception" (Mitchell and Snyder 7). The significance of this insight for either embodied individuals or the body politic is yet to be decided, but what cannot be denied is the recognition that human corporeality is never given but can be manipulated, supplemented or substituted to the extent that normative embodiment becomes increasingly a term without meaning. Whether prostheses reference the cumbersome and heavy artificial legs functioning as replacement limbs in the aftermath of the Civil War, the transfer of a 'live' organ from one body to another, or the swivel chair that allows me to sit comfortably at my computer, it is clear that 'natural' self-complete and singular embodiment is an illusion. To give a less literal meaning to the term prosthesis and to engage with an expanded understanding of the 'prosthetic impulse' (see Smith and Morra) would open the field to a nexus of unexpected but constitutive assemblages that disorder the very idea of normative corporeality.

Both contemporary biotechnologies, which multiply the possibilities of embodiment, and postmodernist body theory make clear that embodiment, far from being fundamentally stable over time, is highly complex and indeterminate. Nonetheless, the Western psycho-social imaginary privileges corporeal wholeness and integrity and thus devalues disability. The point, then, of conventional prosthetic use has been to recover and rehabilitate the 'failing' body to better fit with that imaginary, albeit at the expense of an inevitable transformation in the imaginary. What I mean is that from a phenomenological perspective, it is apparent that the use of a prosthesis goes beyond a simple reliance on an exterior technology that leaves the self unchanged, but is a matter of becoming embodied as hybrid. In an auto-ethnographical account, Vivian Sobchack – whose left leg was amputated several years ago – reflects on how her experience of using a prosthetic limb entails an unsettling contestation not only of her relations to others, but of her understanding of the subjective self. She outlines the lived experience of her body in which she is acutely aware of the way in which both the phantom affects of amputation – which are very common following excision of a limb – and the biomedical prosthesis itself profoundly unsettle the usual binaries that map the clean and proper body of the psycho-social imaginary. For Sobchack, the either/or of real/artificial, objective/subjective, material/imaginary lose their distinctions and prove inadequate to what she understands of her own embodied experience. Instead she is simultaneously aware of an originary 'wholebodied' corporeality, the absent presence of her phantom limb, and the solid materiality of her prosthesis. Those diverse felt experiences are not easily reconciled nor open to any fixed meaning or significance to the self. Even as she consciously strives for a sense of a *whole* body, Sobchack's endeavour is constantly thwarted, not

by the diminution associated with amputation, but by the uncannily extended boundaries of her embodiment.

The slippery spectre of incorporation, evident in Sobchack's account, moves centre stage when we consider the transplantation of organs and tissue from one body to another. The translocation of human organic material, which encompasses not only things like heart and kidney transplants but also hands, corneas or skin, may raise acute problems for recipients insofar as the material incorporation of living parts from the body of another deeply complicates notions of an integrated self (see Shildrick et al. "Troubling;" Poole et al.). Where lay understanding of the transplant procedure might be expected to generate unsettling thoughts with regard to the co-constitution of the embodied self post-transplant, that potential disturbance to the psycho-social imaginary is widely negotiated by a determined separation of the supposedly singular materiality of individual embodiment from intimations of intercorporeality. Some recipients hold fast to a similar model, but the majority do in fact experience a range of affects that speak directly to the transformatory effects of biotechnical interventions (see Shildrick "Imagining"). What is at stake is that donated organs and tissue in particular open up the problematic of how such effectively prosthetic interventions into the interiority of human corporeality contest the body's supposed wholeness and unity. In positivist representations of biomedicine, organ transplantation is rightly presented as a therapeutic, often life-saving, procedure, but as with the disabled users of mechanical prostheses, the well-Being (and I mean here much more than simple health) of recipients themselves is driven by their capacity to tolerate the hybridity that any embodied prosthesis introduces. The question of organic transplantation, nor its as yet unacceptable variant of xenotransplantation, will not be pursued further here, but what is emerging is that all prostheses, whether mechanical or organic, implicitly contest the normative attributions of human being.

What can be taken, then, from the imbrication of a developing theoretical framework and the specific biotechnologies is the urgent need to problematise the notion of prostheses as simply replacements or functional substitutes for 'missing' parts of bodies that appear less than whole. In everyday understanding, prostheses are subsidiary additions to a given, but flawed, body and their value lies in their reparative effect. Yet the designation of them as *supplementary* calls to mind Derrida's 'logic of the supplement' (see Derrida *Speech and Phenomenon*; *Of Grammatology*), which operates as one of many idioms through which he signals the fluidity of categorical boundaries. What Derrida emphasises instead is the familiar nexus central to his work of deferral, ambiguity, undecidability, and the ultimate impossibility of completion. And, he argues (*The Truth in Painting*), the very possibility of (prosthetic) augmentation shows that there is no originary wholeness to restore. Whatever the object – paradigmatically here the body – it has never been self-sufficient. In effect, the supplement is

essential in constituting the object as such and in exposing the undecidable nature of categorical distinctions between self/other, natural/artificial and so on that are usually taken for granted. In other words, prostheses cannot be seen as merely instrumental but construct that which they purport to enhance. As he puts it, "technology has not simply added itself, from the outside [...]. [T]his foreign or dangerous supplement is 'originarily' at work and in place in the supposedly ideal interiority of the 'body and soul'" (*Points...Interviews* 244). And in a further complication to unproblematised accounts of prosthetic usage, Derrida's insistence on the paradox of supplementarity – it implies both the augmentation or making whole of an object *and* the substitution for or replacement of aspects of that object – indicates that a prosthesis may equally increase functionality *and* radically subvert specifically human agency as such. Any supplement may be both compensatory and "something that substitutes, violates and usurps" (Kamuf 139). The ideal of concordant reparation – the making 'whole' of the disabled person, or the restoration of normative life for the transplant recipient – cannot be satisfied. Whatever their form then, prostheses contest the illusion of an originary unified and singular body, exposing instead the fluidity of categorical boundaries, and they raise fundamental questions about the hybrid nature of intercorporeality.

Where Derrida uncovers the mechanics of the Western logos – and by derivation its coincident socio-cultural imaginary – I wonder whether rethinking the whole nexus of the relation between self and other need end with the notion of intercorporeality. Given the material and ambiguous experience of prosthetic limbs or donated organs, which both put into question the singularity of the embodied self, might not the idea of assemblages be more appropriate? Though useful, the term intercorporeality still speaks to solid bodies and a certain stability that belies the fluidity of the multiple and often provisional permutations and combinations that construct and deconstruct what is usually designated as 'human' life. In enabling us to read prostheses in the mode of supplementarity, Derrida opens up an important step in the reconfiguration of corporeal boundaries, but I would suggest that the Deleuzian notion of assemblage might provide further insights into our ongoing re-imagination of the nature of the body. It is apposite that in the loosely labelled new materialism that has come to the fore in recent feminist work, one major focus has been on the immersion of the singular human 'I' in its environmental context of multiple complex relations. Although the emphasis is often on our interconnections with other organisms and species as constitutive of life (see Braidotti; Haraway, *Companion Species*; Rossini), it is as important to provide an account of the part played by inorganic technologies in materializing the putatively human. In that respect, a turn to Deleuze might be highly appropriate in our attempts to reconfigure the terrain.

In the work of Deleuze and Félix Guattari (*Anti-Oedipus*; *A Thousand Plateaus*) the embodied self – rather than being goal-driven and singular as it would be in a modernist model – becomes a network of flows, energies and capacities that are always open to transformation, and that figure what they call desire. Desire, then, is not sexual as such, but denotes a dynamic, indeterminate and productive force, excessive to the embodied self. As Guattari explains: "desire is everything that exists before the opposition between subject and object [...]. It's everything whereby the world and affects constitute us outside ourselves [...]. It's everything that overflows from us" (Guattari 46). And rather than grounding the conventional ideal of autonomous action, separation and self-sufficiency, Deleuzian embodiment emerges from the capacity to make connections, both organic and inorganic, and to constitute new assemblages – 'desiring machines' as Deleuze and Guattari call them – which are in turn disassembled. In place of the normative organisation of the body, Deleuze and Guattari propose "a body populated by multiplicities" (*Plateaus* 30) in which the process of becoming is the process of desire (see 301). In effect, what they promote is a deconstruction, a queering, of *all* bodies to the extent that borders and boundaries no longer function as limits (see Shildrick, *Discourses* 132).

What then is the relevance to disability? Taking off from Deleuzian ideas, which start with the body one has in all its possible variations, makes clear that to think specifically of the disabled body in this context is not to single it out in its difference (there are after all only differences), still less to position it as incomplete or inadequate. Rather the materiality of such a body is a productive site of possibility where anomalous forms, 'missing' parts, and prostheses are enablers of new channels of desiring production that are unconstrained by conventional organisation. In effect – and this clarifies again why cultural studies has much to gain from an engagement with critical disability work – the explicitly anomalous nature of disability demonstrates the promise of an immanent desire that embraces the strange and opens up to new linkages and provisional incorporations. It speaks of multiple connectors that leave behind the normative distinctions between the human and animal, between organic and inorganic, or between an originary body and a prosthesis. Like all of us in varying ways, but perhaps more overtly, people with disabilities come into being through such provisional assemblages: there are human-machine assemblages enmeshing flesh and blood with prosthetic limbs, ventilators, pacemakers, wheelchairs; human-human assemblages with family or assistants, or the incorporation of transplant organs; and human-animal assemblages that rely on service animals such as helper dogs and monkeys, or therapeutic encounters with cats and horses. All of these are forms of prostheses, far exceeding superficial functionality, engaging with the production of new forms of embodiment and desire, and mobilising a particular performativity of the embodied self.

Crucially, Deleuze and Guattari show that the embodied self is already prosthetic and on the way to becoming an assemblage. Although there is nothing to imply that prostheses are especial to disability, nevertheless, disabled people may be made more conscious of the extension, substitution, or supplementation of their bodies both through practical instances and insofar as those modes are taken to speak to the desire to recuperate the body in the face of some kind of *lack* not experienced by the normative majority. The conventional distinction between a positive and negative grounding for prosthetic use is made clear if we compare two recent images. When the non-disabled performance artist Stelarc creates a virtual robotic and interactive arm, that is seen as an amplification of bodily possibilities and critique of biological limitations, whereas the amputee man who uses two arm prostheses is understood to be countering a functional failure of embodiment. Clearly one example is far more technologically advanced than the other, but it is a difference in degree not in kind. What this illustrates is the illusory distinction between the development of prostheses as part of human enhancement technologies (HET) and their use in relation to disability where they are usually intended to replicate normative function and appearance.[3] It might even be argued that human enhancement technologies directed towards disability are the ground zero of deeply ambiguous future developments that will render the notion of disability obsolete. Beyond any Foucauldian sense of the technological disciplining and regulation of the body, nonetheless, all such technological modes are supplementary, excessive to the body, and figure a form of assemblage.

My point is that insofar as they are able to take up the potential of prostheses, disabled people are already well-placed to experience the transformative nature of transcorporeality across both organic and inorganic elements, the assembly and disassembly of surprising and innovative connections, and even the productive troubling of intentionality. As with minoritarian thought and practices more generally, the necessity of breaking through the supposed limits of the resources to hand can both intensify the decomposition of binaries – body/machine; active/passive; natural/artificial; biology/technology – and multiply the erotics of connection (see Shildrick *Discourses*). As Deleuze and Guattari note: "[d]esire constantly couples continuous flows and partial objects that are by nature fragmentary and fragmented. Desire causes the current to flow" (*Anti-Oedipus* 5). The move that Deleuze and Guattari make is to ask not what a body *is* but what a body can *do*. And once the conventional focus on the disabled body as lacking has changed, it becomes clear that the experience of a dis-unified or prosthetic body demands a degree of inventiveness that most

3 | The trope of enhancement does, however, extend to many disabled sportsmen and women who are increasingly using highly technical prostheses that are seen to not just restore functionality but to bestow certain advantages over normative bodies.

people are rarely open to. For Deleuze and Guattari, that connectedness of the body is at the heart of creativity, superseding the prohibition, repression and disavowal of disabled people's forms of vitality with a desire that is expansive, fluid, and connective. On that level, desire itself is liberated not simply from the bounds of genital sexuality, but more generally transcends the restricted parameters of what is usually defined as *sexual*. Above all, what mobilises or stalls the multifarious nature of desire is the extent to which the diverse connective elements escape organised patterns. In shifting the emphasis from the integrity and co-ordination of the whole body to the provisional imbrication of disparate parts, it is no longer appropriate to think of bodies as either whole or broken, able-bodied or disabled. Embodiment is simply a provisional manifestation in a process of becoming driven by the circulation of desire. For Deleuze and Guattari, such flows of energy extend embodiment beyond the merely human. It is not that there is no distinction to be made between one corporeal element and the next, but rather that becoming inherently transgresses borders and turns away from dominant notions of autonomous and strictly human agency. It speaks to bodies – organic and inorganic alike – whose interconnected fluidity and energies mobilise mutual transformations.

At just this point, then, the potential to reclaim disability from its conventional association with lack and to reposition it at the forefront of the circulation of desire is strong. Given a stress on the multiple possibilities of interconnection, anomalous bodies escape their status as a site of repression and disavowal, and instead hold out the promise of productive new becomings.[4] For Deleuze and Guattari the take up of a positive model of desire, limited neither to those already satisfying certain fixed corporeal criteria, nor to the modernist privileging of autonomous agency, underpins a move from the givenness of being to the fluidity of becoming. In place of the limits that the ideal of independence imposes, the emphasis is on connectivity and linkage such that a reliance on prosthetic devices – the crossings between human, animal, and machine – figures not as evidence of inadequacies but of transformative possibilities of becoming other along multiple lines of flight. In tracing how this might have practical implications for disabled people who – because of their perceived lack of self-reliance and oftentimes recourse to prosthetic devices – are usually characterised as dependent and beyond a full experience of pleasure and desire, I want to look briefly at a couple of empirical studies undertaken by a scholar of physical therapy, Barbara Gibson, whose

4 | It is worth noting that where the ideas developed by Deleuze and Guattari with regard to the connectivity and implications of desiring machines have struggled for understanding, the similar and almost cotemporaneous – albeit partially ironic – imaginings of Haraway in "A Cyborg Manifesto" – originally a 1983 conference paper – have become, for feminist and queer theorists at least, seminal fare.

critical work theorises the practical day to day functioning and lived experience of people with severe disabilities.

In one study of young men with Duchenne's disease – who all required long-term use of ventilators – Gibson recognises that the conventional goal of physical therapy to achieve some form of 'independence' bears little relation to what the men actually experience in their own lives. In her perception that her subjects are "both confined to individual bodies and simultaneously connected, overlapping with other bodies, nature and machines" (Gibson, "Disability" 189), Gibson finds greater adequacy in Deleuze and Guattari's rejection of individual autonomy and in their promotion of active becoming as that which breaks through the bounded limits of the singular self. Referring to one disabled man whose life is intertwined with, and made possible by, a series of prostheses (a wheelchair, a ventilator, a gastronomy tube and a voice synthesizer), Gibson remarks not his dependency, but the multiple connections and exchanges of energy: "He is a fluid body [...] a conglomeration of energies. He has replaceable parts [...]. He is an excitation, a point of contact, a relay on a power grid" (191-192). And in a recent study that even more deeply problematises the therapeutic drive, Gibson follows Mimi, a severely disabled 12 year old girl, to show not only how Mimi and her mother are interdependent, but, more profoundly,

> "their selves connect and merge into assemblages and later disconnect and reconnect with others to form different assemblages. Within these assemblages there are no clear distinction between persons or between persons and technologies." (Gibson et al., "Reimagining" 1895)

From her Deleuzian perspective, Gibson offers a radical suggestion of how therapy might be rethought as the task of "facilitating creative assemblages rather than (only) independence. The goal becomes helping persons to live well through making and breaking connections" (1898).

While the accounts outlined here are specific to particular embodiments, the Deleuzian mechanisms that Gibson demonstrates figure both an individual moment of becoming through connection and a modality of existence common to every one of us. The intrinsic vulnerability of embodiment – that we all share – need not be read in terms of weakness and negativity, but opens up the possibility of desiring production through the intensity of multiple connections that are not limited to the human alone. This is what Gibson calls "transgressive connectivity" (Gibson, "Disability" 191). It suggests, at the very least, that the bodily transgressions associated with disabled embodiment are a powerful step towards a re-imagining of 'disability;' and at a wider level it demands that we rethink the significance of such immersive encounters in all areas of life. Whatever the starting place, the dynamic and always unfinished processes of assemblage point to the unlimited potential of becoming. There

is no doubt that the concept of desiring machines enables us to think the experiences of embodiment in a different plane that is as receptive to disabled people as to any others. It may even be more so given that disabled people may have less identification with sovereign subjectivity, or have been compelled to let go of such illusions. It is not, however, that I want to advocate a romanticised view of disability in which desire – in its Deleuzian sense – is always able to circulate as an unimpeded positivity. Clearly, there are some physical and cognitive constraints, some specific corporeal differences and discontinuities that continue to obstruct the flow of energies and frustrate intentionality. It is not easy to let go of the image of a controlling self, even when the body itself demands otherwise. But the reimagining that I am outlining here has no place for the characteristically modernist notions of self-determined choice or for the putative liberty to pursue every possibility. Rather, it offers an alternative way forward that does not rely on the illusion of a coherent subject with fixed and organised desires, and turns instead to the libidinal intensities of what I have called an erotics of connection. It figures desire as a movement of realignment and reorganisation of the body's affects and structures that disperses the subject as such. What matters is the transformative potential of the process such that any existing exclusion from the parameters of normativity must lessen resistance. Those who are anomalously embodied or disabled may find unexpected value in their very location as outsiders.

That is not to say that people with disabilities already exemplify a Deleuzian imaginary. In any case, when Deleuze and Guattari refer to becoming-minoritarian, they are not privileging any given category, but referring to processes that engage in radical forms of border crossing, the capacity to enter into disparate machinic connections, and to the emergence of provisional assemblages. Such channels are *open to all*. Already existent and substantive minorities, like people who are disabled, must – from a Deleuzo-Guattarian perspective – also enter into those processes of becoming, which inherently disperse the relations of power that define desire within limited sexual parameters and position it only within normative borders. It is clear that in the face of an irreducible connectivity as a condition of becoming and the productive play of desire, the privileging of autonomous agency and the conventional forms of embodiment that circumscribe the normative subject would lose their power to set up hierarchies of value. The significance of such an approach is that it offers a fundamental critique of the way in which the dominant discourse of disability activism, and indeed of much standard disability theory, is typically organised. Where the emphasis is currently shaped by the liberal demand for rights, choice, and self-determination – all of which echo modernist principles and speak to a goal of sameness rather than a celebration of differences – a more productive model, and the one taken up by critical disability studies, proposes a revaluation of the qualities of those already living at the margins. Once the

extraordinary plasticity of the body is acknowledged rather than disavowed, then the circulation of desire and the dis-organised and partial satisfactions of pleasure would be a matter of differential exploration, innovation and experimentation, rather than the discredited sites of suppression or shame.

My claim, then, is that were the notion of the technologised body focussed not on individual agency, but on the *emergence* of a sense of self through an erotics of connection, it could transform our understanding of disability and desire. The specific corporeal differences of disability not only contest the very separation of self and other, but in many ways they are already queer in the sense of fulfilling Eve Sedgwick's original delineation of queer as denoting an "open mesh of possibilities, gaps, overlaps, dissonances and resonances, lapses and excesses of meaning [...]" (Sedgwick 8). "A lot of the most exciting work around 'queer,'" she points out, "spins the term outward along dimensions that can't be subsumed under gender and sexuality" (8-9).[5] As I have stressed throughout, it is not that disability is unique, but that its forms of embodiment, and its embrace of prosthetic technologies, serve to exemplify the fragility, instability and provisionality of corporeality in general. This intends nothing negative as it would in modernist discourse, but speaks to the postmodernist insistence that all bodies – normative and non-normative alike – are constantly open to reconfiguration and to the potential of becoming hybrid, nomadic, machinic assemblages. Such radical transformation looks risky and uneasy, but so long as acceptable embodiment remains constituted by the repressive parameters of the modernist imaginary, certain bodies – disabled bodies – will never matter. The mobilisation of desire, which Rosi Braidotti figures as "the ontological drive to become [that] seduces us into going on living" (Braidotti 134), is one answer to that danger. As such, the promise of a Deleuzian-inspired re-imagination may be both necessary and life-enhancing.

The interchange and intersectionality of critical cultural studies and critical disability studies strongly promotes the understanding that it is no longer possible to speak of the body in any unproblematised way, nor as a self-contained unit that might be fitted to a category. The conventional attachment to the fixity of corporeal boundaries and the singularity of the embodied self must give way to an embrace of the criss-crossings of multiple and fluid forms of embodiment. As the plasticity of all our bodies and the capacity of disparate parts to constitute hybrid assemblages become increasingly apparent,

5 | Disability theorists have approached the notion of 'queer' in both more and less radical ways, but most would concur with Michael Warner that queer is defined "against the norm rather than the heterosexual" (Warner xxvi). See in particular work by Robert McRuer, McRuer and Abby Wilkerson, as well as several other articles focusing on the intersections between disability and queer in an issue of *GLQ: A Journal of Lesbian and Gay Studies* 9.1. (2003).

the spatiality and temporality of individual life is broken. The technologies of disability and desire suggest that the superiority of the strictly human will be rapidly overtaken by forms of life comprised by the multiple intertwinings of the human, animal and machine, where none of the elements is stable or predictable. In the era of postmodernity, theories of the body are unlikely to settle. As I understand it, disability studies and cultural studies are instinctive supplements to one another that will flourish to the extent that they are co-constituted, co-operative and contestational at once, pushing forward to develop new theorisations of embodiment that will enable us all to go on living.

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Responses to Margrit Shildrick

Jan Söffner

Embodying Technologies of Disability

Crossing boundaries between disciplines – in this case the boundaries between cultural studies and disability studies – can produce new encounters, connections, assemblages of concepts, and notions. In Margrit Shildrick's highly innovative account, these 'theoretical' assemblages become a criterion to reflect further assemblages: machinic embodiments that are involved in technologies of disability. Shildrick observes these assemblages in every form of human bodily existence, but considers them to be especially visible and common in the prosthetic and cyborgian embodiment of disabled bodies. In describing this embodiment, she draws on postmodern concepts of queering and desire. I appreciate her account, and wish to highlight a particular merit of her approach: its ability to overcome the subject-object dichotomy (i.e., the presumption that an autonomous subject uses a given technology in an instrumental way), and in turn to overcome any extension of this dichotomy into concepts of prosthetic *replacement* (i.e., the presumption that a prosthesis 'replaces' a missing or deficient organic body part and thereby restores a perceived inherent 'integrity' of a body). Crucial to this overcoming is a Deleuzian notion of a proliferous desire: a desire that is not grounded in a lack of something but played out in the productive use of linkages and relations between the animate and the inanimate, between open and extended bodies; a desire that does not take place in forms of 'being,' but in forms of 'becoming.'

Thinking of bodies that live in constant prosthetic conjunctions in these terms is very convincing – especially when a dis-unified body is opposed to the norms of the integrity of a clearly delimited bodily self. It is certainly true that people with disabilities are more used to the inherent challenges of such a self, continually crossing the implications of a subjective authenticity grounded in an ideology of a distinctly delimited body. So the problem of my response is that it risks becoming (or remaining) a boring summary. To avoid this, I will raise some questions that stem from an *enactivist* approach, starting with the embedded and skillful enactions of an extended body.

Approaches such as Shildrick's start with what bodies (can) 'do' rather than with what they 'are;' an enactivist account is similarly opposed to the normative imaginary of a monadic body closed upon itself (see Varela, Thompson and Rosch). It focuses on what Shildrick addresses as "transcorporeality," a notion very similar to enactivist notions of "isopraxis" (see Despret), "shared embodied interaction" (see Gallagher and Zahavi 191-218) or "participatory sense-making" (see Fuchs and De Jaegher). The prosthetic and cyborgian existence of our bodies is reflected very well in this line of theory (see Clark), as is the "plasticity of the body" (see Gallagher).

What are the major differences that allow for a renewed discussion of Shildrick's account? First, enactivist theory offers a much broader discussion about skill (see Dreyfus; Ingold): The plasticity of the body is conceived in terms of learning and training rather than in composing and assembling only. This leads to a different interest concerning prostheses. To give an example: For nearly fifty years, researchers have been developing visual-to-tongue prostheses for blind people, where a kind of a haptic screen that can be placed on the tongue of a blind person displays the 'image' of what the camera records, or visual-to-auditory prostheses where the optic signal is transformed into an acoustic one. Research on the plasticity of the brain has shown that, after some training, some individuals are able to do something that – at least in neurological terms – very much resembles 'seeing:' haptic perception was wired to the visual centers of the brain. Of course such a perception is not a replacement of vision; it has a completely different phenomenology; in particular, it has a different phenomenology of space (see O'Regan et al., especially pp. 60-63). Nonetheless, it offers a potential of perceptive experience completely unknown to seeing people. This finding is completely in line with Shildrick's assertion that the embodiment of prostheses cannot and should not be subsumed under a teleological quest for the restoration of some hypothesized integrity. Rather, bodily functions are technically opened by prostheses in ways allowing for new forms of experiencing. But I hesitate to describe this effect as 'assemblage,' preferring Alva Noë's discussion of a perceptual *skill*. Plasticity cannot be reached simply by assembling a machinic body and an equally machinic technology. It requires training and habituation beyond the initial coupling, which results in the development of a precise 'feel' and does not only concern the 'intensity' of sensation. This is not to say that I would like to discard the notions of 'assemblage,' 'coupling,' 'desire' and 'intensity.' But I think that these terms are one-sided and need a different – enactivist and phenomenological – background to avoid becoming all too theoretical and abstract formulas.

Secondly, enactivism has chosen a different route for overcoming René Descartes than Gilles Deleuze. Put bluntly, Descartes conceived of the body as a machine – to set it apart from the non-machinic mind. In trying to overcome this dualism, postmodern embodiment – and Deleuze is no exception here –

describes the mind as an ideological construction and focuses on machinic constellations as an alternative for a transgressive human existence. Deleuze and Félix Guattari likewise challenge the monadic functional organization of an organic body by the notion of an open body without organs. However, their fundamental critique of Descartes took place before the digital revolution, in which Cartesian dualism was proven wrong in a very unexpected manner: It turned out that machines like computers are very much able to emulate the functioning of what Cartesianism has conceived of as a *disembodied mind*. They look incredibly clumsy, however, when they try to emulate the *body and the embodied mind* (see Dreyfus or Pfeiffer and Bongard). Computers easily beat the best human chess players but watching the world championship of robot-soccer is a rather sobering experience for any soccer enthusiast. This is not even the best example – it is even more productive to think about the still-hypothetical task of giving (embodied) emotions to machines and making them have 'a good feel' for a certain situation. When thinking about the fact that Descartes had thought of similar emotional issues as bodily and machinic, and moreover considering that Deleuze's and Guattari's account of senso-emotional 'intensities' echoes this very premise, the problem of a theory of machinic embodiment becomes even clearer. Similar findings have opened a different way of challenging Descartes: While the disembodied and 'informational' *mind* can be described as machinic, enactive embodiment cannot. As such, if one is to describe embodiment, I find it very promising to follow Hubert Dreyfus in focusing on what (computational) machines *cannot* do. This, too, makes me doubt whether a machinic body is really a good starting point for describing the phenomenology of embodiment.

Thirdly and finally, there is a grounding of enactivist theories in a phenomenological tradition (mostly in relation to Edmund Husserl, Martin Heidegger and Maurice Merleau-Ponty). Deleuze's own relationship with phenomenology was complex: He sometimes appears to be as indebted to it as he opposed it (for a close examination of this relationship, see Hughes). Today, observing something of a renaissance of phenomenology (which I personally very much applaud), there are similar challenges and complexities in the integration of postmodern and phenomenological theories. The problems of such a re-integration become most obvious where embodiment is concerned; and prosthetic bodies are perhaps even paradigmatic for this discussion. Phenomenological theory here offers a broad variety of precise notions, such as the diverse forms of 'directedness' – be they 'intentional' (i.e. provided with 'aboutness') or provided with an intrinsic 'contentless' orientation of motion. One could think about the Husserlian terms of 'protention' and 'retention' as temporal forms of directedness (see Husserl 20-27) – as opposed to the expectation of 'something' (e.g., a dancer's intentional directedness of movement merges with the ongoing rhythm rather than expecting a certain

discrete sound to come along). Alternately, one could consider the Heideggerian distinction between 'vorhanden' (present at hand) and 'zuhanden' (ready at hand) (see Heidegger 66-76): A hammer that is only looked at or observed is a 'present at hand' object with properties; once it is used, it becomes part of a 'ready at hand' embodied activity and ceases to be an object. Finally, one could reference James Jerome Gibson's notion of 'affordances,' i.e. the fact of perceiving the environment not in terms of observation but in terms of what activities they afford – e.g. perceiving a chair not just as brown and antique, but as sit-on-able or climb-on-able. *All these issues* can become an integral part of 'becoming,' of bodily transformations, of bodily connections; and in these cases, a term like 'desire' can be productive. But it cannot be sufficient. If one takes seriously Husserl's *Zu den Sachen selbst!* (*To the things themselves!*), it is necessary to be much more precise.

So what critiques and alternative proposals arise from an enactivist account on technologies of disability? First, I think, it leads to more scrutiny concerning the question of *how* technologies of disability are embodied, how machines become an integral part of lived experience and the extended body. Here, skills play a crucial role. Indeed, I suspect that training and habituation count very much for a transparent experience of prostheses. A person does not simply *assemble* organic leg-movements and an inorganic bouncing-technology when learning to walk using Flex-Foot Cheetahs. There is merging and molding in a process not at all adequately described by the term 'assemblage.' I believe that Deleuze and Guattari's 'fluidity of becoming' is much more about how we conceive of ourselves, how we (re)present and (de)construct our identities, than it is about these concrete bodily tasks. As far as I understand Deleuze and Guattari, in their eyes, habituation and training of skills should even tend towards stratification and codification; in short, in a Deleuzian theory, they lead to territorialization standing in contrast with the *fluidity* of becoming, to which Shildrick refers. But what can this fluidity be, after all, if it does not care about these crucial issues? Can it really reflect the embodied existence properly? And do trained and habituated forms of bodily behavior (i.e., what Pierre Bourdieu called the 'habitus') not constitute an important aspect of identities as well?

My second doubt about the concept of assemblages regards the Cartesian premises of machinic embodiment. Indeed, when I think about where human-machine-interfaces really work in terms of connectivity and assembling (i.e., not in terms of skillful integration), those machines that emulate the Cartesian mind occur to me first. For example, I see a huge power of connectedness and indeterminate productive force of invention in everyday human-computer interaction. That is, I see well-functioning assemblages where the coupling takes place between software and a human mind trained by this software to become as Cartesian as possible – i.e., where a 'cognitio clara et disctincta' and thus the reading and production of discrete signals is necessary for putting

computational functions to work. I also see how well this technology works when it comes to *replacing* skills and *inventing* new identities in such a way that no spontaneous and involuntary forms of bodily communication occur: It is, indeed, much easier to reinvent oneself on a virtual social network than it is to make one's body acquire the skills of an even slightly different embodied existence. Most crucially, it is much easier to execute this reinvention in terms of combining, connecting and assembling. Similar technologies can be a blessing for people (disabled or not) for whom a face-to-face interaction poses difficulties or challenges; but they do not really help the embodied existence – to the contrary, they contribute to making the body superfluous. Smartphone apps push this logic even further and replace skills (thereby omitting long and slow forms of training): Whoever can use a smartphone correctly no longer needs to cultivate – to train – an internal sense of orientation or a good feel for changing weather. This replacement of skills by technology does not lead to a more embodied and sensually intense experiencing – rather, the opposite occurs. This leads me to the suspicion that machinic assemblage is indeed a very valid description for some prosthetic experiences, but in these cases it has a tendency towards phenomena of disembodiment as well.

This leads to my third uncertainty, regarding desiring machines. Indeed, I hesitate to describe technologies of disability in terms of Deleuzian desire, because, for me, the term registers too vaguely (as adequate as I find it for describing the internet) to describe prosthetic bodies. This is not to say that Shildrick is wrong about the openness of these bodies; rather, I think this openness is too complex to be approached through Deleuzian terms. To give an example, the so-called Rubber-Hand illusion (see Botvinick and Cohen) is broadly discussed in the phenomenology of embodiment. This illusion completely queers the so-called 'sense of ownership' for one's limbs and has also been used for an enactivist distinction between sense of ownership and sense of agency concerning one's limbs. A person is put into a sitting position at a table so that they cannot see their 'own' hand, but instead sees a rubber hand placed in a correspondingly appropriate spot on the table. The real hand and the rubber hand are then stimulated in identical ways; at a certain point, the person will comprehend and experience the rubber hand as their own. This experiment can even be radically extended: The synchronous stimulation of a person's body and of a dummy the person sees can even lead to the sense of ownership of a whole body, to out-of-body experiences and even to body-swap experiences (see Petkova and Ehrsson).

Similar experiences may be much more unsettling for non-prostheticised bodies than they are for people used to a prosthesis as part of everyday life. In addition, these findings defy the notion of a normative and integrated body-experience in a way that can help describe the queering of bodies enacted by the use of prostheses. But again: What counts is the logic of habituation, of getting

a feel for a certain activity, of developing a skill for feeling what cannot be felt without making it an integral part of the phenomenology of one's embodied existence – and it would be difficult to call all this 'desire.' What is needed are less generic terms; and I think that the terms offered by phenomenology are appropriate, at least partially. Protentions and retentions, for example, are crucial for timing while skillfully maneuvering a wheelchair; prosthetic limbs help with everyday phenomena of 'Zuhandenheit;' voice prostheses 'afford' speaking in a special manner (that can require preliminary logopaedic training). These technologies do not just queer the integrity of a normative body (as, indeed, any technology does in a way); they do so in a very complex way, creating autonomous niches, action loops, skills, sensualities, feels, etc. of embodied interaction with technology and environment. My suspicion here is that terms like 'connectivity' and 'assemblage' – as helpful as they are – can also lead to an all-too-abstract approach omitting the complex phenomenologies involved in the skillful practices that constitute the functionality, aesthetics, and phenomenology involved in technologies of disability.

I conclude with one more thought focusing on the problems of the notion of assemblage when applied to the prostheses of human bodies. The brain, too, is a part of the body, and enhancements for the neurologically impaired seem to follow a similar logic of assemblage; but they raise different issues than those already addressed. Take the currently developed implants for effective decision-making as an example. Sam Deadwyler (see Hampson et al.) has studied the brain functions active in decision-making, and the way these functions may be disabled for people affected by Alzheimer's disease. A result of this research is an implant short-circuiting neural networks, which can both restore certain lost abilities in brains with impaired function and enhance the critical decision-making process in neurotypical brains. To be sure, this example of becoming-machine contrasts with the Deleuzian idea of becoming-minoritarian. Nevertheless, it is a clear fact that similar prostheses are still opposed to the ideology of a metaphysical self. In addition, these prostheses entail decisive post-human transformations, creating hybrids and machinic assemblages. Again, this is of course not what Deleuze had in mind when pondering these issues. His theories were written at a time when this sort of technology was inconceivable. But now, as it is being realized, I think, technologies of disability raise an important issue that risks becoming a blind spot in cultural studies.

This is not to question the insights Margrit Shildrick offers. The path she opens – in my eyes – leads in a good, perhaps the best, possible direction. As stated, I very much agree with most of her positions: Technologies of disability can, indeed, be a formidable catalyst for overcoming normative ideologies of a healthy and unified body and entail an excellent deconstruction and/or queering of bodies. My aim is to complement these arguments, rather than to contrast them; and here, my focus was dedicated to the drawbacks in reiterating

certain notions proposed by Deleuze and Guattari. Much time has passed since Deleuze and Guattari proposed their theories about desire and assemblage; I think it might be time to let go of some of their notions, in order to fully explore those lessons they still *can* teach us. This is why I advocate for further discipline crossings that involve an enactivist phenomenology.

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Moritz Ingwersen

CYBERN*ETHICS:* THINKING BODIES AND BOUNDARIES THROUGH SCIENCE

This response to Margrit Shildrick aims to link critical disability studies to a paradigm shift in the natural sciences in the attempt to reveal an analogy regarding the ways in which both disciplines come to problematize the notion of boundaries and closure. Where Shildrick speaks of bodies, the physicist may speak of systems. Key insights in contemporary physics – as well as chemistry and biology – arise from the recognition that closed, self-contained systems are an idealization. While classical Newtonian physics rests on the assumption that physical entities can be observed in isolation from the energetic flow of their environment, 20th century science, from quantum mechanics to non-equilibrium thermodynamics and epigenetics, reveals a fundamental inseparability of system and environment.[6] Following the biologist and founder of general systems theory Ludwig von Bertalanffy, this shift corresponds to the increasing tendency to view living organisms as thermodynamically open systems. As he explains: "An open system is defined as a system in exchange of matter with its environment, presenting import and export, building-up and breaking-down of its material components. Up to comparatively recent times physical chemistry, in kinetics and thermodynamics, was restricted to closed systems; the theory of open systems is relatively new and leaves many problems unsolved" (141). Prodded by scientists trained in the wake of systems theory and quantum physics, walls, skins, edges, and membranes have become permeable and fuzzy, and some of the most interesting and complex phenomena are

6 | For an insightful problematization of the distinction between system and environment within the discourse of quantum mechanics, see Karen Barad's *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (153-161). One lesson she draws from the writings of quantum physics pioneer Niels Bohr is the fundamentality of "differential material embodiment (and not merely of humans), not in the sense of the conscious subjective experience of the individual human subject but in terms of different material configurations of ontological bodies and boundaries" (155). As an immediate follow-up to a reference of analogous concerns in postcolonial, feminist, queer, and disability studies she quotes physics Nobel laureate Richard Feynman on the visual construction of boundaries: "What is the outline? The outline is only the edge difference between light and dark or one color and another. It is not something definite. It is not, believe it or not, that every object has a line around it! There is no such line. It is only in our own psychological makeup that there is a line" (Feynman cited in Barad 156).

described with predominant attention to the precarious conditions at thresholds and boundaries.[7] As Manuel DeLanda elaborates:

> "The last thirty years have witnessed a [...] paradigm shift in scientific research. In particular, a centuries-old devotion to 'conservative systems' (physical systems that, for all purposes, are isolated from their surroundings) is giving way to the realization that most systems in nature are subject to flows of matter and energy that continuously move through them. This apparently simple paradigm shift is, in turn, allowing us to discern phenomena that, a few decades ago, were, if they were noticed at all, dismissed as anomalies." (129)

Accompanying this paradigm shift in modern science is a change in focus from the system's interior towards its edges, from its essence to its conditions of transition and transformation: "Ask not what a body *is* but what a body can *do*," writes Shildrick paraphrasing Gilles Deleuze and Félix Guattari ("Border Crossings" 144). In *A Thousand Plateaus* they translate this interrogation of bodies in flux into a problematization of affect as the fundamental parameter of transcorporeal attachment.[8] Arguably, Shildrick's reading of Deleuze and Guattari encourages the suspicion that the dominant contemporary notions of subjectivity are still too heavily invested in the problematic heritage of a Newtonian worldview. In this vein, the tendency to view disability not only as an essential characteristic independent of its social and physical environment, but moreover as an intrinsic deficiency in need of rehabilitation, harkens back to a more than 300-year-old privileging of ideal bodies, closed systems, and external observers. Yet, cognate to a scientific mindset in which systems in a non-static equilibrium were dismissed as anomalies (see DeLanda), "[t]he modernist myth of the norm of 'bodily perfection,'" as Rosi Braidotti and Griet Groets note, is "little more than a hostile imposition upon necessarily fluctuating organisms" (165). This is, of course, not to say that Newtonian physics and liberal humanism must be done away with altogether, but rather that some of their tacit

7 | In particular, consider the 'observer effect' in the Copenhagen Interpretation of quantum mechanics, Ilya Prigogine's Nobel Prize in chemistry (1977) for his research in non-equilibrium thermodynamics and the introduction of "dissipative structures" in his seminal book *Order Out Of Chaos* (1984), and the nomination of Adrian Bird, Howard Cedar and Aharon Razin for the Nobel Prize in medicine (2013) for their research in epigenetics on environmental effects on DNA methylation.

8 | See Deleuze and Guattari in *A Thousand Plateaus*: "We know nothing about a body until we know what it can do, in other words what its affects are, how they can or cannot enter into composition with other affects, with the affects of another body, either to destroy that body or to be destroyed by it, either to exchange actions and passions with it or join with it in composing a more powerful body" (284).

assumptions need to be reconsidered and their claim to universality curtailed. In a way then, what quantum mechanics and complexity theory are to physics, recent interventions on behalf of 'the posthuman' are to modern subjectivity. Anchored in a profound incredulity towards the "ontological hygiene of the humanist subject" (Graham 12), articulations of posthumanist subjectivity – among which Shildrick's work should be included – are moreover frequently quite explicit in their indebtedness to the sciences, in particular to the field of cybernetics (see, for instance, the work of Katherine Hayles).

Shildrick's consideration of prosthetic corporeality rests on the premise that bodies are always already diversified, that their boundaries are permeable, and that they cannot be separated from the material and energetic flows that suffuse their environments. A precedent for this line of thinking can be found in first-generation cybernetics spearheaded by Norbert Wiener, a discourse whose most "disturbing and potentially revolutionary" implication might have been "the idea that the boundaries of the human subject are constructed rather than given," as Katherine Hayles puts it in her widely received study *How We Became Posthuman* (84). By shifting the focus from a system's (organic or inorganic) internal mechanics to its modes of communication and exchange with other systems, cyberneticists describe the world not in the search for essences but instead point at the productivity of relations and feedback channels. Their most powerful tool, as Hayles reminds us (see 91 and 93), is analogy and their inherent mode of inquiry is the problematization of a boundary, a border crossing.

Echoing the subtitle of Wiener's foundational book *Cybernetics*, Shildrick's account of prosthetic embodiment explores the "fusions of animal and machine" ("Border Crossings" 139) with an emphasis on intercommunication and what the new-materialist political theorist Jane Bennett might call the "material vibrancy" at the threshold between organic and inorganic surfaces (Bennett xiii). The standard conception of prostheses, Shildrick notes, is that of a "concordant reparation – the making 'whole' of the disabled person" ("Border Crossings" 142). If, however, the closure associated with the idealized whole body is itself recognized as fictitious and all corporeality, as Shildrick notes elsewhere, "is inherently leaky, uncontained, and uncontainable" ("Bioethics" 7), her inversion that "we are all always already prosthetic" characterizes selfhood as a state in flux ("Border Crossings" 140).

Categorical distinctions between disability and non-disability are often drawn in terms of the degree of a person's independence and autonomy, in other words they are measured in degrees of closure. Drawing insights from Barbara Gibson's therapeutic practice with wheelchair and gastric feeding tube users, Shildrick offers, in turn, the possibility to conceptualize corporeality in terms of degrees of connectivity and linkage and she seems to suggest the obsolescence of the essentialized separation between physical autonomy and the need for assistance. This move allows us to reformulate the underlying

chorus of what is usually known as the 'social model of disability' as follows: Let us not ask about people's essentialized lack of autonomy and self-sufficiency, but let us instead uncover the ways in which their channels of connection with their environment are socially limited or obstructed. By thus making disability a matter of communication between subject and surroundings we can begin to question the channel: How are stairs more jammed than ramps? To what types of perturbations are wheelchairs more susceptible than shoe soles? Can we envision a mode of dealing with disruptions that is not rehabilitative and seeking to restore unambiguity, but instead, one that is creative, embracing the noise that inevitably occupies the channel?

Consider the 'telephone game' popular among children, where the distortion of the message becomes a source of delight and players revel in its unforeseen transformations. It is along these lines that I understand Shildrick's Deleuzian reading of prosthetic embodiment when she speaks in favor of moving from "the givenness of being to the fluidity of becoming" ("Border Crossings" 145). The demarcation of prosthetic, deaf or cognitively divergent embodiment against the imaginary unity considered nondisabled can consequently be reviewed as a normalizing reduction of the multiplicities of potential interactions between what seems to lie inside and what seems to lie outside of the skin. While Shildrick limits her analysis to "crossings between human, animal and machine" (ibid.), let me draw out the environmental extension of embodiment implicit in her argument by considering a performance by autism rights activist Amanda Baggs.

Baggs gained the attention of major media outlets such as Wired Magazine and CNN for an 8-minute video clip titled "In My Language" that she released on Youtube in 2007. In the first part of the clip we see her rocking back and forth, caressing the knob of a drawer, rubbing her fingers on a computer keyboard, burying her face in the pages of a book, and batting a swinging necklace with her hand. Viewers will likely recall behavior patterns that have come to be associated with the autism spectrum, and some might find themselves sympathizing with the CNN journalist who visited Baggs for an interview in 2007 and who recounts "having a hard time discerning whether she even knows I am there" (Gajilan n.pag.). Accompanied by a continuous two-tone humming, Baggs' performance has the effect on the neurotypical viewer of not only estrangement, but also the potentially reassuring retreat into familiar categories of proper and improper subjectivity. This person, one is inclined to reassert, is disabled; her movements appear random or compulsory, and from this seeming vacuity the liberal humanist might end up extrapolating the absence of a rational self. All the more challenging it is to the viewer when, in the second part of the video, instead of a human voice we hear an artificial voice synthesizer translate Baggs' typing into speech. Against the backdrop of Baggs'

erratic movements, the coupling of a nonhuman voice and a very articulate message will provoke a rupture in some neurotypical viewers' expectations.

Initial reactions will likely include the suspicion that the sentences introduced in subtitles as 'A Translation' do not stem from the same self that previously seemed to elicit the labels 'atrophic' or 'disabled.'[9] If this disbelief can be dispelled, viewers are invited to disroot their customary (potentially ableist) perspective and open their conceptual frameworks to a powerful alternative vision of selfhood. Her "native language," Baggs explains, "is not about designing words or even visual symbols for people to interpret. It is about being in constant conversation with every aspect of [her] environment reacting physically to all parts of [her] surroundings" (Baggs). Rather than circumscribing a Cartesian interiority, Baggs' language is expressive of a subjectivity that subsists in relationality. In an even more radical way than the human-machine assemblages considered by Shildrick, Baggs demonstrates what Shildrick calls the opening and "immersion of the singular human 'I' in its environmental context of multiple complex relations" (Shildrick, "Border Crossings" 142). When Baggs flaps her hands in resonance with an undulating flag outside her window, a suffusion of self and environment occurs that recalls a fever sensation related by Wiener in his autobiography and framed by Hayles as an allegorical founding moment of cybernetics. He writes: "It was impossible for me to distinguish among my pain and difficulty in breathing, the flapping of the window curtain, and certain as yet unresolved parts of the potential problem on which I was working" (Wiener cited in Hayles 92). Perceptively recognized by Hayles as a "boundary problem" (Hayles 93), Wiener's experience, which may or may not have lead to a mathematical epiphany, may serve as a reminder of the link between transcorporeality and cybernetics, and highlight the historical lineage of a paradigm shift from closed to open systems and embodied subjects. Unlike the purely cognitive self envisioned by

9 | In fact, Baggs' video provoked scorn and accusations of fraud from numerous bloggers associated with the autism community doubting the veracity of her diagnosis. A prolific blogger herself, Baggs has since responded posting copies of her medical case history on her blog *Ballastexistenz* and persists as a very outspoken and articulate commentator on issues relating to the lives of people with disabilities. These controversies regarding the legitimacy of her presence in a political debate over minority identity and 'proper' representation testify to a humanist bias of activists who wish to police and regulate what counts as authentic and containable expression of selfhood. Furthermore, Baggs' performance seems to evoke a Cartesian unease about the coupling of a purportedly dysfunctional body with profound intellectual reflection. Her use of a speech synthesizer heightens the challenge to notions of selfhood anchored in the Western tradition which, as Jacques Derrida has shown in *Of Grammatology*, suggests a mapping of voice and presence.

Descartes as a "thing that doubts, understands, affirms, denies, wants, refuses, and [...] imagines" (Descartes 24), Baggs illustrates an affective interaction with her environment that celebrates an opening of corporeal interfaces to noise and creative interferences. Just as the linkage to a technological appendage, in Shildrick's words, opens up "transformative possibilities of becoming other along multiple lines of flight" for Gibson's clients (Shildrick, "Border Crossings" 145), Baggs' bodily conversation with the objects surrounding her effectively deterritorializes habitual patterns of interaction. The computer keyboard, the door handle, the flag, or the book are not subordinated to the appropriate socialized imperatives, but rather are defamiliarized as vibrant surfaces for immediate sensorial contact. Employing her senses to explore the back of her hand, a spinning top, a towel, a pen, and the camera lens (in this order), Baggs insists: "I smell things. I listen to things. I feel things. I taste things. I look at things. It is not enough to look and listen and taste and smell and feel, I have to do those to the right things [...] or else people doubt that I am a thinking being" (Baggs). Cognate with Shildrick, Baggs is criticizing an idea of personhood anchored in the humanist tradition which curtails, reduces, and contains the multiplicities of human embodiment:

> "Ironically the way that I move when responding to everything around me is described as 'being in a world of my own' whereas if I interact with a much more limited set of responses and only react to a much more limited part of my surroundings people claim that I am 'opening up to true interaction with the world'" (ibid.).

Baggs is, in fact, diagnosing her diagnosers with a severe case of Newtonianism where only a closed system is a good system and noise needs to be shut out. Her criticism of the reductionist consensus about consciousness and responsivity inadvertently echoes affect theorist and Deleuze translator Brian Massumi who, illustrating the material excess that characterizes the preconscious formation of affect, comes to the conclusion that "[w]ill and consciousness are *subtractive*. They are *limitative, derived functions* that reduce a complexity too rich to be functionally expressed" (29). Neither Baggs' nor Shildrick's account presents the motor behind transgressive corporeality as a unilateral consciousness or will, but rather as the reciprocal exchange of material forces and affects. In the work of Deleuze and Guattari, which provides the conceptual infrastructure to Shildrick's argument, a theorization of affect directly derives from a reading of Spinoza's *Ethics*; affect thus becomes the key to ethics.[10]

10 | See Deleuze's *Spinoza: Practical Philosophy* (1988) and "On Spinoza."

Indeed, what binds recent intersections between Deleuzian scholarship and critical disability studies[11] is the demand for a "radical reconfiguration of bioethical thought" (Shildrick, "Bioethics" 4) which takes into account the affective relays between bodies and their organic as well as inorganic supplements. Contained in this line of thinking is a radical disavowal of the divisions between self|other, subject|environment, or whole|fragmented that have become so ubiquitous in demarcations of disability. "So what then," asks Braidotti, whose work in many ways resonates with Shildrick's project, "What if the subject is 'trans' or in transit, that is to say no longer one, whole, unified and in control, but rather fluid in process and hybrid? What are the ethical and political implications of a non-unitary vision of the human subject?" (Braidotti, *Transpositions* 9). These questions must be understood in direct response to a Cartesian ideology whose legacy, in philosophy as much as in the natural sciences, as science philosopher Michel Serres notes, "excludes the compound, the chimera that consists of disjoint parts, pieced together without rhyme or reason, in which adjacent elements seem to exist in bad neighborship and things connect that do not quite fit together [...] equally in view of their edges" (Serres 53; translation by author).

Mirroring Shildrick's benign integration of nonhuman components such as the wheelchair, the ventilator, the gastronomy tube or the voice synthesizer, Jane Bennett also aims at a more inclusive conception of subjectivity by drawing attention to our affective relationship with objects. She likewise speaks of an "ethical task [...] to cultivate the ability to discern nonhuman vitality, to become perpetually open to it" (Bennett 14), which, she hopes, will "inspire a greater sense of the extent to which all bodies are kin in the sense of inextricably enmeshed in a dense network of relations" (13).[12] Advocating the levelling of hierarchies and the emphasis on exchange between the (human) subject and its (non/human) environment, Shildrick, like Braidotti and Bennett, not only revokes the Enlightenment anthropocentrism that helped shape a humanist regime of normalcy, but she moreover imbricates the study of trans-subjective conduct – ethics – with the study of feedback relations – cybernetics. To capture this link I would like to propose a neologism that is commonly

11 | See, for instance, the work of Braidotti, in particular, *The Posthuman* (2013) and *Transpositions: On Nomadic Ethics* (2006), Patricia MacCormack's *Posthuman Ethics* (2012), or Dan Goodley, Rebecca Lawthom, and Katherine Runswick Cole's "Posthuman Disability Studies" (2014).

12 | It is not difficult to detect Bennett's indebtedness to the work of Bruno Latour who in *We Have Never Been Modern* (1991) uncovers the neglected investment of Western Modernity in hybridization and networks of human and nonhuman actors.

credited to Heinz von Förster: cyber*nethics*.[13] As the chronicler of the Macy conferences (the ground zero of cybernetics, held between 1946-1953), Förster was one of the earliest commentators on Wiener's treatise on self-regulating machines. On this basis he spent his life outlining the stakes of what he called a 'second-order cybernetics' which, in extension of Wiener's work on self-control mechanisms (considered first-order cybernetics) and in support of Bertalanffy's biological systems theory, marries informational closure with thermodynamic openness as a viable model to describe interactions between self-reflexive human observers and their environment (see "Cybernetics of Cybernetics"). From the recognition that the human system is itself engaged in a perpetual reorganization of its faculties as it is caught up in a continuous feedback loop with its environment, Förster distils an ethical imperative: "Act always so as to increase the number of choices" ("Ethics" 227). Freedom and autonomy for Förster result only when potential channels of interaction are multiplied and not regulated and normalized; when, confronted with new input, unpredictability, inventiveness and undecidability are encouraged; and when human agents recognize their energetic openness instead of idealizing closure. In other words, his code of conduct follows an imperative to connect. Although it functions as little more than a recurring rhetorical punchline in his writings, Förster's 'cyber*nethics*' might serve as an anchor for the transformation of bioethical thought envisioned by Shildrick. Both frameworks, while entering the field from different disciplinary angles, ultimately aim at the appreciation of transgressive corporeality not as a marker of pathology, but as a mode of being that can be instructive in reconsidering the customary perception of the relationship between embodied agents and the world.

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13 | See especially Förster's *KybernEthik* (1993) and "Ethics and Second-Order Cybernetics" (2003).

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