‘Mere Jelly’: The Bodies of Networked Learners

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ABSTRACT
This paper examines the issue of embodiment and its implications for networked learners. Drawing on an exploration of relevant aspects of cultural theory and on interviews with students and teachers, it discusses the effects of technological mediation on the way in which we experience our embodiment in online learning contexts. It does this in two main strands. The first is a consideration of the mind-body split and the way in which this dualism is being challenged in contemporary theory and in the online classroom. The second is a discussion of the ways in which the body is ‘re-articulated’ by its relation to the machinic, and the effect such re-articulation appears to have on the experience of learners.

Keywords
learning, embodiment, identity, cyberspace, culture

INTRODUCTION
The changes technological mediation brings to bear on the way we experience embodiment is of particular concern to those of us who are involved in the theorisation and practice of networked learning. The distanced, unstable relationship between body and subject with which we engage when we communicate online involves us in modes of identity formation and pedagogical relations which are very different from those which, as learners and teachers, we experience in the face to face classroom. This paper seeks to establish a theoretical context by which we might begin to understand the issue of embodiment in the online classroom, a context anchored in a discussion of the accounts given by students and tutors of their experiences in online learning environments.

I will present the theoretical content of this paper in two sections which reflect the two main perspectives on embodiment which emerged in my discussions with students and teachers. The first outlines moves in cultural and cybercultural theory which attempt to disrupt and deconstruct the oppositional hierarchy between mind and body. The second, related, area focuses on approaches which consider the shifting significance of embodiment as we enter the age of the posthuman. The paper ends with a consideration of interviewees’ accounts of embodiment in the online classroom, structured around the two theoretical strands I have identified – first, the losses involved in a mode of learning in which the body is invisible and second, the gains to be found in maintaining an openness to the differently articulated body in cyberspace.

THE MIND-BODY SPLIT IN CYBERCULTURE AND ONLINE LEARNING
The notion that the body is distinct and separate from the mind or soul is a dualism which has dominated western philosophy since Plato. The concept is carried through into modernity largely through Descartes’ separation of body and mind into two separate and independent substances. As humans, according to Descartes, we experience ourselves first as a mind thinking, and then as a body which occupies time and space but does not think (Descartes, 1968). The mind-body split continues to hold sway over our conception of ourselves to the extent that we often do not even think of it as a socially constructed opposition – many of the discourses we use in describing our relation to digital technologies are shaped by its assumptions. As Coyne has pointed out, the Neoplatonic ideal extends itself into cyberspace through the ‘technoromanticism’ of some of its proponents:

> Certain digital narrative is idealist and has taken to heart the Neoplatonic concept of *ecstasis* – release of the soul from the body – though here the soul is replaced with the mind, the means of ecstasis is immersion in an electronic data stream, and the realm of the unity is cyberspace. (Coyne, 1999: 10)

This vision of cyberspace as a zone in which minds can merge, untrammelled by the conventional constraints experienced by our embodied selves in our ‘real lives’, was common in theoretical and popular conceptions of cyberspace in the 1980s and 90s. Where Gibson conceived of the vulnerable body (the ‘meat’) of the cyberspace jockey left behind by a thinking self jacked-in directly to the streaming data-flows of the matrix

(Gibson, 1986) – a vision the Wachowski brothers carry through into the trilogy of *Matrix* films (Wachowski and Wachowski, 1999-2003) – Barlow, in his famous 'Declaration of the independence of cyberspace', heralded cyberspace as a threshold into a new era of the mind, where we would be free from the governmental forces which exercise control over our embodied selves (Barlow, 1996a). The roboticist Hans Moravec famously extended Cartesian dualism into a dramatic future for human intelligence – and provided a title for this paper – when he proposed the possibility of downloading an entire human consciousness into an artificial material base. Moravec suggests that those who view the human body as being integral to human consciousness (those who take what he calls a 'body-identity position') ought rather to consider the essence of the human as residing in *process*:

> Pattern-identity, conversely, defines the essence of a person, say myself, as the *pattern* and the *process* going on in my head and body, not the machinery supporting that process. If the process is preserved, I am preserved. The rest is mere jelly. [original italics] (Moravec, 1988: 117)

Such positions may appear extreme, yet much discourse around distance learning and the use of learning technology in higher education carries their echo. That we even conceive of the distant learner as being a possibility is revealing of our dependence on a vision of education in which, as long as the 'mind' of the learner is engaged, the locus of his or her body is largely irrelevant. For Peters, the 'mind/body separation' is 'the most culturally deeply embedded dualism with which educational theory and practice must come to terms'; 'it nests within a family of related dualisms and remains one of the most trenchant and resistant problems of education in postmodernity' (Peters, 2002: 404). If we see distance learning as the logical extension of the Cartesian mind-body split in education, we can glimpse in many of the discourses of e-learning something like the desire for *ecstasis*, in their vision of the pure mind of the learner liberated from the bodily constraints of time and space to achieve a one-ness with other minds in the digital expanses of the cyberspace classroom. The 'any time, any place' mantra is one manifestation of this vision:

> Every learner can, at his or her own choice of time and place, access a world of multimedia material… immediately the learner is unlocked from the shackles of fixed and rigid schedules, from physical limitations…and is released into an information world which reacts to his or her own pace of learning. (Benjamin, 1994: 49)

Moravec's future may seem like a wild imagining, yet his privileging of process over matter is a dualism that resonates throughout much mainstream discussion of the place of technology within higher education. For Peters, for example, 'space and time have become negligible parameters for data transmission. Even now they cross over borders. …. Those who have always interpreted all learning and teaching as an exchange of information, will understand the changes that have taken place and will tend to accept them' (Peters, 2000: 16).

A later section of this paper will show how, when students talk about their experience of being online, they often do so in a way which does not draw a clear distinction between their learning bodies and their learning minds. Many feel the strain of the apparent erasure of the body involved in the use of learning technologies – particularly those the focus of which is communication. To this extent, my interviewees were in tune with current theory which reacts against the privileging of mind over matter, and the dualism which underlies it. It is to such theory that I now turn.

'RE-DISCOVERING' THE BODY

> There is no such 'thing' as the 'mind'. (Burkitt, 1999: 12)

> What separates the cyberspace communities from their ancestors is that many of the cyberspace communities interact in real time. Agents meet face to face, though as I noted before, under a redefinition of both 'meet' and 'face'. (Stone, 1991: 524)

The quotes from Burkitt and Stone demonstrate that the language in which we have conventionally spoken of mind, body and their relation is becoming exhausted. If Burkitt's draws our attention to the impossibility of continuing to distinguish mind as a substance separate and contained from the body, Stone's reminds us that the terms by which we understand embodiment itself are radically shifting. I return to Stone later, and focus for the moment on theory which challenges the oppositional hierarchy set up by Descartes and perpetuated in the discourses briefly discussed above.

Burkitt proposes an anti-Cartesian re-unification of mind and body under the term, adopted from Ilyenkov (Ilyenkov, 1977), 'the thinking body' (Burkitt, 1999: 67). Within such a view, thought is reconceived as 'embodied, social activity' (7), and the mind-body opposition undergoes a reversal – 'Indeed, far from the mind being something distinct from the body located in space and time, as Descartes thought, the mind can be reconceptualised as an emergent effect of a body active within the social, historical and biological dimensions

of space and time' (15). Thought processes and embodied practices are enmeshed through the mediation of artefacts – objects and symbols, including language – through which we extend ourselves in the world and which, in turn, re-form our bodily movements and perceptions. This view, as expressed by Burkitt, reacts against poststructuralism and social constructionism and their tendency, as he sees it, to re-assert Cartesianism by privileging the discursive over the material. In drawing on the work of Ilyenkov and Merleau-Ponty (Merleau-Ponty, 1962), Burkitt asserts the primacy of the body; language in this view does not precede thought, rather it works to extend or enhance it (Burkitt, 1999: 80).

That thought is embedded in embodied practices and not always conscious or reducible to abstraction is also present in the work of Bourdieu and his concept of the habitus (Bourdieu, 1977, Bourdieu, 1984, Bourdieu, 1990, Bourdieu, 2001). The habitus is the learned series of bodily dispositions through which we are placed within – and through which we perpetuate – the social order. The patterns of our daily lives are not experienced or learned through conscious abstraction, but through repeated movements and actions which become habitual. Thus the habitus defines our living practices, deportment, modes of speech, manners and tastes, in the process marking us as belonging to a particular social group or class. Through it, we know more than we think we know – it is a form of (embodied) knowledge which we *live*, rather than think or speak. Such a perspective works, as Hayles puts it, to 'turn Descartes upside down'. We do not experience ourselves first as a mind thinking; rather, the ways in which our bodies interact with our environment defines the parameters by which thought itself can function (Hayles, 1999: 203). In such a way, a fundamental challenge is posed to our conventional distinction between mind and body, and between the cultural and the natural.

RE-ARTICULATING THE BODY

The collapse of the boundary between the natural and the technological is one of the themes taken up by Stone in her seminal essay 'Will the real body please stand up?' (Stone, 1991). Alongside a recognition of the primary place of the body ('No matter how virtual the subject may become, there is always a body attached' (117)), Stone's essay offers a searching analysis of the ways in which body and subject are re-articulated through their immersion in the technologies of cyberspace. As she puts it, 'the unitary, bounded, safely warranted body constituted within the frame of bourgeois modernity is undergoing a gradual process of translation to the refigured and reinscribed embodiments of the cyberspace community' (Stone, 1991: 523). This notion of reinscribed embodiment constitutes the second strand of the theory I apply here to networked learning.

Not just in cyberspace, but in its wider contexts also, our relation to technology re-articulates our sense of our own embodiment. Communications technology offers us the opportunity to construct textual dream-bodies in chat rooms and MOOs (Turkle, 1996, Dibell, 1998), and to place graphical representations of our embodied selves, in the form of avatars, within gaming and 3D virtual worlds (Cybertown, 2000, Maxis, 2002). Bio-technology maps and manipulates the body at the level of its genetic code (Haraway, 1991b). Technological intervention at 'street' level involves us in the 'renaissance' of body modification, from the common practices of tattooing and ear-piercing (Sweetman, 1999) to the often brutal penetration and bodily re-shaping undertaken by the modern primitives (Vale and Juno, 1989). Medical science offers us prostheses and implants ranging from the therapeutic (hip replacements, artificial skin grafts, pace makers) and the cosmetic (breast enhancements, lip implants) to those – such as gender reassignment – which problematise the distinction. Each of these instances, far from working to efface or de-privilege embodiment, functions to stress the body's 'presence'. Yet they also demonstrate the extent to which technological intervention asks us to re-consider what our embodiment means to us. When Burkitt, quoting Walt Whitman, asks 'If the body is not the person, then what is a person?' (Burkitt, 1999: 1), he might also consider the question perhaps most pressing in the age of the posthuman – 'what is a body?'.

Hayles makes the point that the posthuman is not only about technological interventions in the body – it is also about the emergence of a new kind of subjectivity, one which owes less to the autonomous individuality of the liberal subject and more to the collectively constituted, fragmented subject of postmodernity. For Hayles, 'the posthuman subject is an amalgam, a collection of heterogeneous components, a material-informational entity whose boundaries undergo continuous construction and reconstruction' (Hayles, 1999: 3). Such a subject is formed in an altered, and intimate, relation with technological processes. Yet, as she sees it, the death of the liberal subject simultaneously opens the field for a re-introduction of the body into our considerations of what it means to be human – it is 'an opportunity to put back into the picture the flesh that continues to be erased in contemporary discussions about cybernetic subjects' (5). While working with the belief that 'human being is first of all embodied being' (283), we can embrace the figure of the posthuman as a means of 'rethinking the articulation of humans with intelligent machines' (287).

Perhaps one of the most influential examples of this kind of 'rethinking' – one which focuses very much on the way in which the body is rearticulated through its fusion with the machinic – is Haraway's conceptualisation of the cyborg (Haraway, 1991a). Haraway sees communication science and biotechnology as 'the crucial tools recrafting our bodies' (164), working to construct 'natural-technical objects of knowledge in which the difference between machine and organism is thoroughly blurred; mind, body, and tool are on very intimate terms' (165). In the figure of the cyborg – the cybernetic organism – Haraway sees the breaking-down of the dualistic boundaries which have worked to form the western self. In presenting a challenge to our distinction between organism and machine, between nature and culture, the cyborg offers the possibility for a new politics, particularly for women, one in which the traditional 'matrices of domination' (174) are cracked open via our 'coupling' with the machinic. Within this view, the human relation to the machine is not one of subject to object – rather it is one in which such a distinction is disturbed. Machines are no longer outside us, they *are* us – 'The machine is not an *it* to be animated, worshipped, and dominated. The machine is us, our processes, an aspect of our embodiment' (180).

Haraway's cyborg is both discursive and material – a creature of imagination and mythology but also a material reality (Hayles, 1999: 114). From its legitimate manifestations in medical science to those developments which are still prototypical or illegal (the tooth-mounted mobile phone (Sandhana, 2002), the embedded tagging chip (Want and Russell, 2000)), the technological penetration of the body is only one aspect of our current and future cyborg existence. Already, our everyday engagement with new communication technologies (PCs, mobile phones, PDAs) involves us in what Hayles calls a cybernetic 'feedback loop' which cannot help but work to alter our sense of our own embodiment, our positioning as material entities within time and space. As these technologies become more ubiquitous, and more mobile, so the cyborg self becomes increasingly normalised. Again, rather than seeing the tool or the technology as something outside us, as something simply useful or threatening or both, we are able to see technological mediation as something integral both to the individual and the social body. Our embodiment as cyborgs or as posthumans involves the dissolution of the organic body as an essential category defining the human. As Stone holds, 'no matter how virtual the subject may become, there is always a body attached' (Stone, 1991: 524), but where that body's boundaries lie, by what incorporation of the organic and the machinic it is constituted, and what our condition as embodied entities means to us, are all now issues for deliberation rather than certainty.

ACCOUNTS OF EMBODIMENT IN ONLINE LEARNING SPACES

In charting some of the theoretical territory surrounding the issue of embodiment, I have attempted to highlight two main strands which exist in synergy with each other. First is the project of countering the Cartesian dualism which sets up a relation of opposition between body and mind. Second is that stance which sees the collapse of the boundary between the technological and the natural as effecting profound changes in the means by which our experience of embodiment is constituted. These two strands run very clearly through the accounts students and teachers gave me of their experiences online, and for this reason I will present a selection of these accounts in two main sections. The first reflects the problem of the 'screening' of the body inherent in many instances of technology-mediated learning; in learning online, some teachers and students experience frustration at the lack of visibility of the embodied self, a frustration which translates into an unwillingness to conduct the business of 'genuine' learning without each other's embodied presence. The second strand relates to the way in which learners speak about the technology positively, as enabling a different articulation of their embodied selves. The accounts in this strand stress a shift in the meaning and impact of embodiment on learners through their immersion in the cyberspace classroom. Far from being exclusive of each other, these two broad perspectives are intertwined – often both are voiced by the same individual. Taken together, they represent an area of tension which must be negotiated as the academy shifts into the digital domain.[1]

'I can't use my body': the losses of distance

I don't know how to say it but it's something that doesn't make me comfortable. It should be the other way round I know because I'm in my room and there's just my computer and everything, but I don't feel comfortable, I feel more comfortable when I'm talking to someone, because then I can use my body language, you know, I can use my face expressions or when I'm on the computer I feel like the other person may not get the point.

Right, is that the source of your discomfort, the fact that you might not be achieving some kind of proper communication?

[1] These extracts are taken from a series of interviews undertaken as part of a wider project of research into the cultural impact of the university's shift into the digital. More information about the institutional and social contexts of the interviewees, the research methodology drawn on and the methods used in generating their accounts is available – please contact the author.

Yeah and it's also that the other person doesn't see me? And I don't see the other person. It's the other way around, so I don't know what they're doing, you know, I don't know, I don't feel comfortable, because maybe they're saying 'What's she talking about?', you know, 'That's not the issue' or you know like laugh at me because of something I'm saying, so in that sense. I don't know what the other person is doing at the other side of the computer, so I don't feel comfortable in that sense.

OK, so would you say that learning online liberates you or constrains you?

um, [pause], instantly I would say it constrains me, and then you ask me why! [laughs]

why? [laughs]

because I can't use my body! you know I can't use my you know, body language, I can't use my hands or I can't like say things twice. I just you know it's just it's just the language I'm using, like language you know a language! D'you know what I mean?
Paulina

In this account, as in many others I was given, the predominant sense is that to see your interlocutor is to know them. Paulina's sense of frustration seems to emerge from the fact that online there is no way of visually accessing the body of the person 'at the other side of the computer'. Likewise, the screen prevents her interlocutor accessing Paulina's body, the expressive movements of which Paulina perceives as being as profoundly communicative as verbal language. For Paulina, a source of discomfort in the online mode is the way in which communicating through the screen forces her to construct for herself the emotions and responses of the person with whom she is 'talking'. The problem here lies in her tendency to construct those emotions negatively, in terms of the other person disagreeing with her ('that's not the issue') or laughing at her. This issue of being forced to construct for oneself the responses of the other came up again in my interview with Megan.

I don't know it's just that the way you think about it, because it's on the screen, you think it must be almost like a soap opera, the fact that things go on that eh you can't see happening, you just hear about it, you just read about it, it's like it's not real. Because there's no actual emotions, because it's just words, you can't see facial expressions so em it's not real. You can't see people thinking about things or em or arguing, like getting in an argument, it's all just words.

But you must know that there are emotions going on?

Yes but it's behind doors, they're they're not kind of *with* the words, they're separate somehow, because it's on the screen and it's not, it's not, you're not seeing and and hearing at the same time, you're reading the words and then you're thinking about what emotions come with it, rather than seeing it at the same time. Yeah, the fact that you only see the words, you don't see how they react to the way they've said it or you can't see their reaction to what you're saying, if you see someone act shocked you can see it in their face or in the way their body language, you can tell how they're reacting to what you've said or what's being said, whereas online it's just words and through the words you think about what they're thinking, but it's not happening at the same time.

Megan

Communicating online is perceived here as being an interpretive act in a sense that intercorporeal communication is not. The loss of the language of the body leaves 'just words' – a phrase Megan repeats three times – resulting in a communicative act that is 'not real' in the sense that its emotional contexts are purely constructed, a matter of interpretation.

The emphasis on the importance of the presence of the *teacher's* physical body to learners is also reflected in many accounts.

I don't know I just think it's so much better to have like face to face interaction than have a sort of writing down thing, 'cos you don't know who you're talking to you know, you if you never if you never meet your tutor, you won't know what they look like or, y'know, I think these things are important, especially 'cos I mean I think when you come to university you come in and I think through school and primary school and maybe even through when you go to work, when you start here you always look to your tutors and stuff and you like look at them, you're not judging them but you're sort of looking at them for like how to act and how, you sort of try and pick up things that they do, y'know basically you I think it's really important.

So you can do that better face to face than online?

Yeah I think so. Um I think it's so sad really, upsetting sort of, y'know you could just sit in your house all day just 'O well I'll just click online there for the tutorial'. I think that's really sad 'cos, y'know I think you have to get out and see people and speak to people and stuff it's I just think it's so important. I think that basically you're always not dependent but you're always looking at the person above you and thinking 'How would I do that?', y'know what I mean you always have higher goals in yourself and you always want to be like that person. And you don't I don't think you get that.

Marina

For Marina, it is the presence of the teacher's body that distinguishes meaningful face to face interaction from 'a sort of writing down thing'. Rather than focusing on the loss of the social cues and communicative richness of body language, she emphasises the importance of being able to *look* at the teacher in order to learn from their embodied presence the right way of acting and of being. The body of the teacher – the 'site/sight of authoritative display' (Angel, 1994) – becomes a locus for the aspirations of the learner ('you're always looking at the person above you and thinking "how would I do that?"'). Even students with a less elevated view of their teacher may look to his or her body as a focus for group bonding around a learning experience. I asked Cornelia why she felt so strongly that she would always prefer to learn face to face:

Well I think it's the learning environment and being together with other people and and seeing the expression on their faces and going for coffee in between, and talking about the tutor and how he always picks his nose or whatever, things like that. I mean this is what um what makes learning fun, in a group.

So how real does your tutor feel online to you?

Well I think he's always the tutor and not really a personality or a human being. It just it's not very real, he only comments on the work, but I don't really know him as a personality is what. Which can be an advantage if somebody, for example if I don't like the tutor or don't like their face, or I mean there are so many aspects that we take in when we see somebody, the gestures they make and everything, um but I think I prefer the real situation.

Cornelia

Even a bodily present teacher whose primary characteristic is nose-picking is superior here to an online tutor who fails even to make 'human being' status. Here, as in many accounts, the teacher in the cyberspace classroom – the teacher who is not visibly, bodily present – is represented as lacking in authenticity. One feature of these accounts is the way in which they problematise the 'student centred' ideal. They seem to indicate that the teacher often provides a focus and anchor to the learning situation in a subtle way which is not to do with his or her traditional, often discredited, role as 'transmitter' of information. That the student-teacher hierarchy is equalised online is clear from these accounts, but what is also clear is that this 'flattening' is not necessarily welcomed by learners. The accounts given here are those of students who look to the authoritative, physically present teacher's body as the conduit through which desire – for learning, bonding, connection – is realised.

Bodily difference

I turn now to accounts which tied in to a more positive view of the differently articulated body in cyberspace, those which looked towards the shift in relation between body and subject as enabling alternative, and possibly improved, means by which relations in the online classroom might be established. In speaking about their experience online several students highlighted the way in which the mediation of the screen afforded protection from the vulnerabilities and insecurities which dogged them in the embodied, real-time classroom. When I asked Megan if, overall, she would prefer to learn online or face to face she replied:

Probably online, because of the confidence thing. It's not so bad to ask embarrassing questions, because if you ask a stupid question you feel stupid and you get embarrassed, you don't wait for an answer, you just leave, whereas if it's online it's just like it's only words. They don't seem real, it's not you, so it's not too bad.

Megan

The focus on the purely textual nature of the online mode which characterised the quote I used from Megan in the previous section is reiterated here. Now, however, while the lack of embodied presence and dependence on 'words' reduces the authenticity of the exchange ('they don't seem real'), they also function to protect her from the deeply disturbing prospect of speaking up in class. This quote is only three and a half lines long, but twice stresses her feelings of 'embarrassment' and 'stupidity' in class. The protection offered by the screening of the body, and the location of the learning experience in a purely textual form, offers the opportunity for Megan to work with an alternative articulation of her self which *is* able to speak up ('it's not you so it's not too bad'). This almost total separation of the online subject from the embodied subject is reminiscent of Charlie's stance:

[Online] you just type it in anyway, and press the button, 'cos it's not like you're actually saying it at all, so it's not you, it's like you're just a name, people won't attach it to, like, who you are.

Charlie

In claiming that online 'it's not you' these students describe the emergence of a very different subject which we might describe in terms of the cyborg self – one which is so highly mediated by the technological environment that the conventional opposition of presence-absence does not apply. My final extract from Megan's interview relates to the issue of judgement, which is taken up again below.

Well people can't see you, so it doesn't matter what you look like, whereas you know people don't judge you as much on what you look like, or what you're dressed like, or whatever, they just listen to what you say and not make so many judgements on other factors. So I think it does, people listen to you more. 'Cos you see it within groups, the more good-looking people tend to have more attention like from everyone, everyone just talks to them more, whereas online you're all the same, so people will listen to everything you say rather than like listening and um always looking at someone else.

Megan

The attraction of the online mode for Megan here is in its ability to subordinate looking to 'listening'. Embodied and face to face, Megan is silent, possibly neglected, feeling vulnerable, 'stupid' and 'embarrassed'. Online, she speaks on terms which to her feel far more equal.

For Sarah, the attraction of the online mode is in its tendency to disallow judgement based on anything other than the student's ability to contribute verbally to class discussion:

I suppose there's something about, if you think you're funny or whatever and I do think I am sometimes, again because of the whole freedom thing you can make jokes or be clever online and there's no danger of somebody, OK they could criticise you online, but because it's not, it's almost like it's not real, they're not seeing you, the only judgement they can make on you is what you've written. They can't make any other judgement on you, your appearance or anything like that, so it's almost like it's safer, you can change your whole personality.

Sarah

Here, 'being clever' is perceived as a dangerous endeavour, something which might lay Sarah open to criticism in a face to face classroom. Online, though the criticism might still come her way, it is 'not real' because the critic is 'not seeing you'. As in many of the accounts I have presented, invisibility and inauthenticity are linked. Here, however, the result is an online environment which is 'safer', since judgement of 'what you've written' cannot be accompanied by criticism of 'your appearance'. It is perhaps striking, though not surprising, that the comments I received relating to embodiment, vulnerability and judgement were, in most cases, in interviews with young, female students. For this group, the power of criticism and negative judgement have significant power to silence, a power which seems to be associated with the rawness of vulnerability around issues of physical appearance. For students like Sarah, the online classroom offers a space where there is some protection from this. Here again, bodily invisibility offers opportunities for a differently articulated subjectivity.

CONCLUSIONS

One conclusion for this paper might be to see the structures of higher education as depending on stable systems and hierarchical relations which are generally at odds with the potential of internet spaces to offer alternative, looser (because not visibly embodied) modes of subjectivity construction. To take this stance would be to see the disquietude relating to the invisibility of the body described in this paper as being a result of the immersion of learners and teachers within the metaphysics of presence, to recognise the purely written characteristic of computer-mediated communication as being a significant obstacle for some learners and to appreciate that, for some, the screen functions as a barrier which, in masking the body, works to limit the intensity of interpersonal contact. The accounts which describe a positive shift in the meaning of embodiment in the online classroom might be seen as a glimpse into a realm of digital possibility which, on the other hand, we might do well to nurture when we design our networked learning environments and develop our online pedagogical approaches.

Thus I conclude by re-emphasising that the two strands I have followed throughout this paper are intertwined and interdependent; to seek to remember that, in cyberspace and elsewhere, mind and body are indivisible entities is not to prevent us from looking to new technological environments as spaces where the conventional constraints and significations of embodiment can be challenged and shifted. The challenge to learners and teachers in cyberspace is in devising creative pedagogical approaches which work with these new articulations.

REFERENCES

Angel, M. (1994) In 'Pedagogies of the obscene: the specular body and demonstration', *Jane Gallop seminar papers, proceedings of the Jane Gallop seminar and public lecture 'The teacher's breasts', June 1993*, (Ed., Matthews, J. J.), Canberra, The Humanities Research Centre

Barlow, J. P. (1996a) *A declaration of the independence of cyberspace*, Electronic Frontier Foundation, web site, http://www.eff.org/~barlow/Declaration-Final.html, Date of access: 6 October 2003

Benjamin, A. (1994) 'Affordable, restructured education: a solution through information technology', *RSA Journal,* **May 1994**.

Bourdieu, P. (1977) *Outline of a theory of practice,* Nice, R., Cambridge: Cambridge University Press.

Bourdieu, P. (1984) *Distinction: a social critique of the judgement of taste,* Nice, R., London: Routledge.

Bourdieu, P. (1990) *The logic of practice,* Nice, R., Cambridge: Polity Press.

Bourdieu, P. (2001) *Masculine domination,* Nice, R., Stanford, CA: Stanford University Press.

Burkitt, I. (1999) *Bodies of thought: embodiment, identity and modernity,* London: Sage.

Coyne, R. (1999) *Technoromanticism: digital narrative, holism, and the romance of the real,* Cambridge, Mass.: MIT Press.

Cybertown (2000) virtual world, http://www.cybertown.com, Date of access: 13 October 2003

Descartes, R. (1968) *Discourse on method and the meditations,* Sutcliffe, F. E., London: Penguin.

Dibell, J. (1998) *A rape in cyberspace: or tinysociety and how to make one*, web site, http://www.juliandibbell.com/texts/bungle.html, Date of access: 13 October 2003

Gibson, W. (1986) *Neuromancer,* London: Voyager.

Haraway, D. (1991a), 'A cyborg manifesto: science, technology and socialist feminism in the late twentieth century', in *Simians, cyborgs, and women: the reinvention of nature* London: Free Association Books, pp. 149-181.

Haraway, D. (1991b) *Simians, cyborgs and women: the reinvention of nature,* London: Free Association Books.

Hayles, N. K. (1999) *How we became posthuman: virtual bodies in cybernetics, literature and informatics,* Chicago: University of Chicago Press.

Ilyenkov, E. V. (1977) *Dialectical logic: essays in its history and theory,* Creighton, H. C., Moscow: Progress Publishers.

Maxis (2002) *The Sims online*, Electronic Arts, http://www.eagames.com/official/thesimsonline

Merleau-Ponty, M. (1962) *Phenomenology of perception,* Smith, C., London: Routledge.

Moravec, H. (1988) *Mind children: the future of robot and human intelligence,* Cambridge, Mass.: Harvard University Press.

Peters, M. (2002) 'Dreyfus on the internet: Platonism, body talk and nihilism', *Educational Philosophy and Theory,* **34, 4,** 403-406.

Peters, O. (2000), 'The transformation of the university into an institution of independent learning', in *Changing university teaching: reflections of creating educational technologies* (ed, Evans, T. and Nation, D.) London: Kogan Page, pp. 10-23.

Sandhana, L. (2002) *Excuse me, is your tooth ringing?*, Wired News, web site, http://www.wired.com/news/technology/0,1282,53302,00.html, Date of access: 20 October 2003

Stone, A. R. (1991), 'Will the real body please stand up?', in *Cyberspace: first steps* (ed, Benedikt, M.) Cambridge Mass: MIT Press, pp. 81-118.

Sweetman, P. (1999) 'Anchoring the (postmodern) self? Body modification, fashion and identity', *Body and Society,* **5, (2-3),** 51-76. http://tcs.ntu.ac.uk/body/abstracts/5(2-3).html#sweetman

Turkle, S. (1996) *Life on the screen: identity in the age of the internet,* London: Phoenix.

Vale, V. and Juno, A. (ed.) (1989) *Modern primitives,* Re/Search Publications.

Wachowski, A. and Wachowski, L. (1999-2003), *The Matrix trilogy*, Warner Bros.

Want, R. and Russell, D. M. (2000) 'Ubiquitous electronic tagging', *IEEE Distributed Systems Online,* **1, 2**. http://dsonline.computer.org/archives/ds200/ds2wan.htm