Stud Philos Educ (2016) 35:305–320
DOI 10.1007/s11217-016-9516-5

Posthumanism and the MOOC: opening the subject of digital education

Jeremy Knox[1]

Published online: 25 February 2016

Abstract As the most prominent initiative in the open education movement, the Massive Open Online Course (MOOC) is often claimed to disrupt established educational models through the use of innovative technologies that overcome geographic and economic barriers to higher education. However, this paper suggests that the MOOC project, as a typical example of initiatives in this field, fails to engage with a theory of the subject. As such, uncritical and problematic forms of humanism tend to be assumed in the promotion and delivery of these courses: the expectation of rational and self-directing individuals, with a universal desire for education. This fundamental orthodoxy limits both the understanding of technology and the possibilities for a concept of 'openness' in education. Given the global scale of the MOOC, and its high-profile associations with elite universities, the need for critical alternatives is pressing. In this paper I draw on critical posthumanism—an umbrella term for a range of philosophical and theoretical positions—for two purposes. Firstly and principally as a perspective through which to critique the educational reliance on humanism that is maintained in the project of the MOOC, and secondly to suggest alternative frameworks for thinking about the intermingling of humans and technologies in education. Space and time are considered as the two principal sites with which technological change is realised, and the promotion of the MOOC is shown to mask spatial and temporal conditions through adherence to an underlying humanist framework.

Keywords MOOC · Humanism · Posthumanism · Digital education · Space · Time

✉ Jeremy Knox
jeremy.knox@ed.ac.uk

[1] Moray House School of Education, University of Edinburgh, 4.09 St John's Land, Edinburgh, Scotland, UK

Determining the MOOC

As one of the most prominent initiatives in current educational technology, the Massive Open Online Course (MOOC) is often positioned at the vanguard of progress and innovation in higher education. Indeed, so much so that MOOCs have frequently been portrayed as disruptive or revolutionary (see Barber et al. 2013; Haggard 2013; Shirky 2012); an innovation that works to destabilise established educational structures and routines. The seamless consolidation of notions like *innovation*, *disruption* and *progress* that surround MOOC hyperbole derives unmistakably from their associations with the core of the so called 'tech industry' in California's Bay Area. Mainstream interest in MOOCs resulted from initiatives at Stanford University, ultimately spawning the Coursera and Udacity platforms (Gaebel 2013, Rodriguez 2013). Such origins enfold a particular culture, and a particular understanding of technology into the MOOC narrative. Whether it is the 'mission' of providing 'the world's best education' (Coursera 2015), or the claim of 'empowering learning in the classroom and around the globe' (edX 2015), the promise of a superior educational experience is at the forefront of MOOC promotional material. 'Silicon Valley solutionism' (Morozov 2013) is not difficult to detect in the discourse of the MOOC project, habitually premised on the idea that higher education can be understood as a predefined set of problems accompanied by corresponding technological remedies. As with the broader 'open education' movement in which MOOCs have emerged, barriers to education are framed principally as geographical, temporal and economic. MOOCs, it is supposed, solve these problems through, not only 'free' admittance but 'universal access' (Coursera 2015), and the suggestion that courses can be undertaken 'at your pace, at home or in a café' (edX 2015a). However as will be discussed below, the spatial and temporal dimensions of the MOOC are perhaps not so easy to annul.

Nevertheless, the links to the Silicon Valley culture of solutionism and rationality infused with the promise of technological progress (Giannella 2015) are important to understanding, not only the MOOC project, but also the contemporary interface of education and technology. This is precisely because critical stances towards technology too often remain within a subject | object, human | technology orientation that preserves the centrality and privilege of a particular kind of human subject. As we shall see, it is this oppositional relationship that significantly restricts our understanding of the increasing entanglements of humans and technologies in education. Thus, when Giannella questions the assumption prevalent in Silicon Valley that technology is intrinsically a force for good, the critique is premised on an opposition between rationality and morals (2015). The belief in technological progress, it is suggested, 'invites us to cannibalise our initial moral aspirations with rationality' (Giannella 2015). However, the argument that one can either act with a rationality shaped by the intrinsic properties of technology, or act with a morality essential to one's human condition, appears to retain the determinist positions that pervade the discussion of technology in education. We might also therefore understand these positions in terms of technological determinism (Dahlberg 2004, Chandler 2002) in the case of rationality, or 'uses' or 'social' determinism (Kanuka 2008) in the case of morality. It perhaps no wonder then that metaphors of the Internet tend to remain within a binary of 'salvation or destruction' (Johnston 2009); in our case either the eradication of our innate human principles by the outside forces of logic and systemisation, or the redeeming of a universal human condition through the moralisation of our brutal and uncultivated technologies. Indeed, it is precisely this opposition which has structured the debates around MOOCs, with advocates tending to position technology as a transparent instrument for

individual and social emancipation (Coursera 2014; Udacity 2015), while critical responses make parallels with the fast food industry and warnings about the 'uncontrolled spread of junk education' (Baggaley 2014). David Lewin's paper in this special issue examines further the binary logic that structures contemporary discussions about the effects of technology on education.

This problematic oscillation between determinist positions derives squarely from an underlying dualism that maintains the separation of human and technology. In other words, where a fundamental subject | object divide structures the very terms of the debate, the only possible outcomes are the extent of interactions between the two, where an essence (dominant or submissive) is preserved in each. Returning to the idea that rationality (as the machinic) and morality (as the humanistic) are opposed; one might look no further than Kant to find reason entrenched within the very same humanist project for which morality is defined. In other words, they are not opposed at all, but rather derive from the same set of ideas about the human condition. In *Über Pädagogik* (On Education), Kant's specific commentary on education, moral conduct is positioned unmistakably as the *consequence* of practical reason, rather than its opposition (2010). Significantly, rationality is here not only an educational aim, but also the requirement for an authentic human condition (Kant 2010). The point here is that the divisions between the human and the technological are not so easily defined, yet it is the notion of essence, and particularly human essence, that appears to infuse and govern the debate. Thus when Giannella questions the Silicon Valley assumption that 'technological change equals historic human betterment' (2015 no pagination), the critique avoids discussion of the relationship *between* these factors, and focusses the very conditions of the debate on which essence should prevail.

This is this same orientation in which the question of 'humanising online pedagogy' arises. The value of the posthuman perspectives outlined below and explored in this paper is to hold that 'humanising' to account; to question the assumptions about what exactly *is* human and not-human in the debate. Without such questions, the complexities of any change wrought through the digital are difficult to grasp because the commitment to the humanist subject predetermines a dualist and oppositional structure.

Outlining posthumanism

While the term posthumanism is contested, and used in a number of contexts (Wolf 2010), following Badmington, I suggest it to be 'a convenient shorthand for a general crisis in something that 'we' must just as helplessly call 'humanism' (2000, p 2). Indeed, Davies elaborates on the shifting and historically specific manifestations of 'humanism', showing that an authentic human condition has been anything but consistent (1997). It is only the nineteenth century version that establishes a 'particularly powerful and complex notion of the "human"—a quality at once local and universal, historical and timeless' (Davies 1997, p 22). It is precisely the spatiality and temporality of the human condition that I want to foreground in this paper, for as we shall see, it is these foundational qualities that are often identified as the site of technologically induced change. Posthumanism can be understood as holding to account the assumptions inherent in humanism:

> We might call this the myth of essential and universal Man: essential, because humanity – human-ness – is the inseparable and central essence, the defining quality, of human beings; universal, because that essential humanity is shared by all human beings, of whatever time or place. (Davies 1997, p 24)

Acknowledging that humanism is most accurately understood as an ideology defined in retrospect (Fuller 2011), three principal aspects relevant to this paper are: universalism (a homogenous human condition); essentialism (intrinsic and uniquely human characteristics); and autonomy (an innate and necessary independence).

It is important to stress that posthumanism can be understood as 'the historical moment that marks the end of the opposition between Humanism and anti-humanism' (Braidotti 2013, p 37), and it is therefore not the overturning of humanistic values, but rather their reassessment that is of primary concern. A critical stance is however the principal contribution of this paper, questioning not only the 'delusion of grandeur in positing ourselves as the moral guardian of the world and as the motor of human evolution' (Braidotti 2013, p 25), but also the limitations that a humanist framework places on our understanding of technological change. Elsewhere I have further described the deep-seated and co-constitutive relationships between education and humanism (Knox 2016). It is these assumptions which will be shown to ground the project of the MOOC, which might then been seen as simply the latest promise of the humanist education project, premised on self-directing individuals with a universal desire for education.

The non-oppositional posthuman perspective foregrounded in this paper draws specifically from sociomaterial theory (Fenwick et al. 2011). This is a term for a broad range of theories that foreground the co-constitutive relationships between human and non-human factors, and has been suggested to be particularly useful for educational research (Fenwick et al. 2011). The posthuman perspective in this paper also draws on the non-determinist concepts of 'intra-action' (Barad 2007) and 'becoming' (Deleuze and Guattari 1987). Barad proposes 'intra-action' as 'the mutual constitution of entangled agencies', in which 'agencies are only distinct in relation to their mutual entanglement; they don't exist as individual elements' (2007, p 33 emphasis original). 'Becoming' is a central concept in the Deleuzian ontology, which foregrounds the idea of continual, nonteleological change rather than abstract and static identity (Deleuze and Guattari 1987). These concepts are proposed as ways to better understand the complex contingencies engendered by the increasingly global intermingling of humans and technologies in the MOOC.

The next sections will explore the apparent commitment to humanism in more depth by showing precisely how the MOOC project has routinely defaulted to humanistic stances that preserve the rational and autonomous subject and mask the underlying relational conditions through which it is constituted.

Technology and change

Amongst the sometimes messy conflations of innovation, disruption and progress that surround discussions of the MOOC are important questions about the extent to which digital technology is involved in profound educational, and more broadly societal, change. For Stiegler, recent technological development has intensified the disordering of that fundamental to our historical relationship to the world: space and time.

> Today, calendarity and cardinality are profoundly disturbed. Night and day become interchangeable through artificial electric light and computer screens. The distance and the delay between circulating messages and information nullify each other and the behavioural programmes become correlatively globalised. (Stiegler 2003)

Discussions of the increasing entanglement of education with globalisation (as will be discussed in detail below) suggest that '[s]pace becomes virtual and global transactions occur in "real time"' (Walker 2009, p 487). Whether these changes are occurring or not, the intention of this paper is to show that the field of education and technology remains substantively distanced from such a debate. As the following examples will demonstrate, the so-called 'digital moment' of the MOOC (Universities UK 2013) often works to overlay questions of foundational and material disruptions with a somewhat orthodox educational narrative; one that attempts to preserve spatial and temporal order along established humanist lines.

> Humanity, the humanistic 'Man' (always singular, always in the present tense), inhabits not a time or a place but a condition, timeless and unlocalised (Davies 1997, p 32).

Adhering to a humanist framework, what MOOCs appear to promote is an 'other' time and an 'other' space; a virtual dimension to education that conveniently escapes the complex and unequal material landscapes of Internet access, the working realities of educational institutions, and the increasing pressures to streamline and maximise our limited time in a condition of finitude.

The place of the campus

To date, the promotion and research of MOOCs has failed to engage with concepts of space brought about by the involvement of global internet infrastructures and digital communication technologies. As we shall see, MOOC promotion remains more committed to 'place': either the prestigious institution or a flattened world of universal desire for higher education. Elsewhere I have elaborated on the visions of the world or the globe prevalent in promotional material and research emerging from the principal MOOC organisations (Knox 2015). The 'heat map' visualisation is perhaps the most prominent, featuring in research emerging from the first wave of edX and Coursera MOOCs (see Perna et al. 2013; Nesterko et al. 2013; Breslow et al. 2013). Figure 1 shows an example from the MOOCs@Edinburgh Group (2013). These data visualisations are not only indicative of the colonialist tendencies implicit in the broadcast pedagogy of the MOOC project, but also the material conditions overlooked in the one-dimensional representation of enrolment (Knox 2015). Precisely, these heat map visualisations seem to be far from the integrating of space and time intensified by the digital (Stiegler 2003), and manifest more clearly as a flattening of time subordinated to space. The multifarious temporalities that we can consider MOOC participants to experience or produce are collapsed into an image of location, and ultimately an advertisement of the reach of global MOOC organisations. While these maps show variance in the enrolment numbers from different geographical areas, the underlying premise for the visualisation itself is a universal desire for the kind of education on offer through the MOOC. Indeed, the grey or colourless areas that consistently characterise the African continent (see Perna et al. 2013; Nesterko et al. 2013; Breslow et al. 2013; MOOCs@Edinburgh Group 2013), for example, thus merely mark the territory ripe for further MOOC colonisation (Knox 2015). In this sense, the heat maps serve to visualise the humanist assumption of universalism; that 'deep down "we" are all the same' (Badmington 2000, p 4).

In this paper however, I want to dwell on another dominant image that pervades the MOOC, that of the university campus. Both the Coursera and edX websites prominently

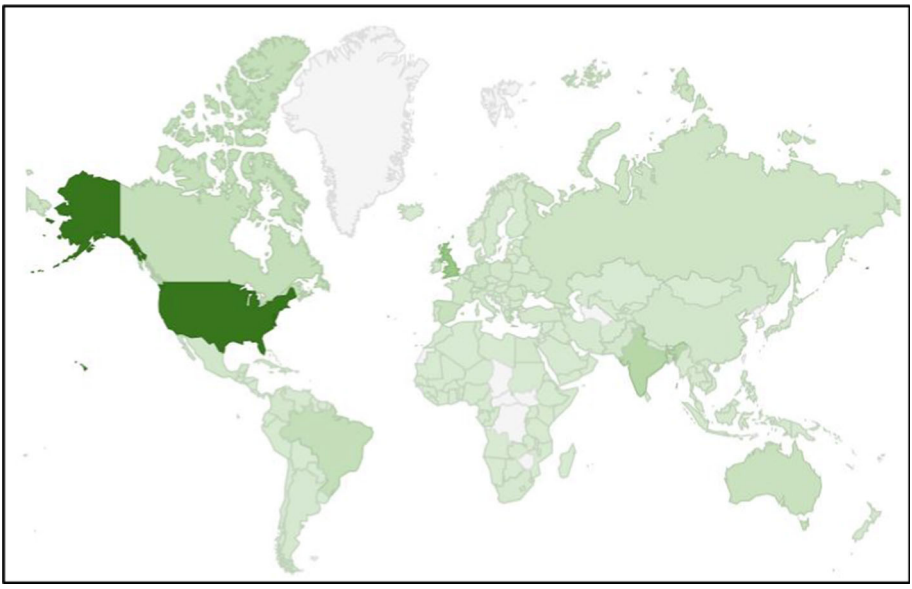

Fig. 1 An interactive 'heat map' visualisation, showing an image of the world comprised of estimated registrant numbers on courses offered by the University of Edinburgh on the Coursera platform in 2013 (http://moocs.is.ed.ac.uk/edinburgh-report-2/maps-of-mooc-participants/)

display images of campus real-estate atop the various pages that introduce their partnering educational institutions. For example, visitors to the University of Pennsylvania's page on the Coursera site, or Harvard University's page on the edX site, are greeted with the ornate and grand facades of their respective campuses (see Fig. 2).

The legitimate question that must be asked here is not only how the prestigious buildings of these elite institutions relate to the experience or condition of the MOOC student, but also how these images frame the spatial understanding of online education in general. Given the dispersed and multiple locations of MOOC participants (as evidenced in

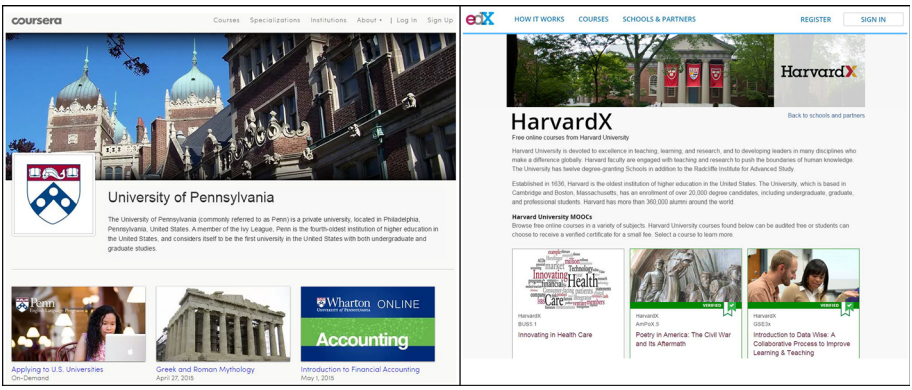

Fig. 2 The University of Pennsylvania page on the Coursera website and the Harvard University page on the edX website, each headed with an image of their campus real estate

the heat maps visualising enrolment mentioned previously), and their access through the platform software offered by Coursera and edX, the extent to which images of Ivy League property accurately represent the space of these educational offerings remains highly questionable. The campus grounds of the University of Pennsylvania and Harvard University are almost certain to be inaccessible to the vast majority of individuals who sign up to their MOOCs, and the very premise of the MOOC initiative is one of providing access to those prevented from doing so.

In examining the ways that university space is enacted by distance students, Bayne et al. show that the campus remains 'symbolically and materially significant' (2014, p 569). However, they also attest to the limitations of bounded and regional space for understanding the complex topologies manifest through distance and digitally mediated university attendance (Bayne et al. 2014). Crucial here is another set of oppositions entangled in the dualist orientation that underpins this debate: that of the 'online' and 'offline', or the 'virtual' and the 'real'. Stiegler is adamant that the digital is 'far from being an "immateriality"—a completely void notion that is currently so much gossiped about' (2003, no pagination). Trading off the idea of a 'virtual "classroom"' (edX 2015), MOOC images of campus real-estate serve to fix understandings of space at the surface and the superficial, and conceal the actual spaces of study that constitute this kind of educational participation.

Bayne et al.s collected 'images' (2012a) and 'postcards' (2012b) from distance students demonstrate precisely the local and material of 'virtual' and 'online' study. These include, for example, pictures and videos of the desks, computers, offices and bedrooms in which students actually take part in distance education (Bayne et al. 2012b). Following Bayne et al., to participate in a MOOC might thus be more productively considered in terms of these multifarious yet connected spaces: 'to be oriented in multiple ways to the institution, to be simultaneously inside and outside, in flux and in stasis, in presence and in absence' (2014, p 581).

However, for MOOC promotion, the authenticity of 'place' shrouds any consideration of the challenges wrought through the mutability of 'space'. Images of campus real estate obscure the much more complex ways that we might perceive the space of the MOOC with a vision of institutional authority. This is another way in which we might understand Bates's contention that '[h]aving ignored online learning for nearly 20 years, Stanford, MIT and Harvard had to re-invent online learning in their own image to maintain their perceived superiority in all things higher educational' (2014, no pagination). Moreover, as I have suggested elsewhere, these images counter the underlying rationale of inequality and elitism that Coursera and edX use to legitimise their position (Knox 2014a). At the very same time as claiming to disrupt exclusivity and inaccessibility by providing free admittance, the institutional façade is used to add prestige and authenticity to the MOOCs on offer.

Significantly, the technology of the MOOC—that claimed to be the core of the innovation at play—is entirely transparent in these promotional renditions of educational space. The specific devices through which people participate, the cloud servers which host the platform, and the vast Internet infrastructures that facilitate the connections between them, constitute a very material dimension to the MOOC space, yet they feature sparsely in the promotional narrative. Judith Enriquez-Gibson's paper in this special issue explores the materiality of networking infrastructures in more depth.The campus images can thus be understood as visualisations of the instrumentalism that underpins the entire MOOC project. They are not then images of the campus at all, but images of the transparent window through which the prestigious campus is seen; the invisible networked technologies that supposedly facilitate an unproblematic collapsing of space and time, such that

Internet access is equated with campus attendance. As I have elaborated elsewhere, the heat map visualisations of MOOC research give us a clue about the actual technologies that construct this window to the campus (Knox 2015). Produced largely from IP address data, these visualisations do not just mark the location of individual human participants, but also the local Internet infrastructures that combine to decide who is enrolled, or not, visible or invisible (Knox 2015). Rather than simply a matter of individual choice premised on universal desire, MOOC enrolment must be understood as a much more complex socio-material enactment, in which *where* one resides and amongst *what* specific technology significantly influences one's ability to participate.

Accompanied by habitual references to universal admittance, the images of partnering institutions therefore uphold another binary in this dualist MOOC narrative: the local | global. However, it is a binary in which the two sides remain distinct, and the leafy campuses of the Ivy League appear untainted by worldwide participation. Indeed, the images of university real-estate serve to sustain the elite institution, and necessarily so because the very legitimacy of the MOOC rests on such reputation. Both Coursera and edX make a point of foregrounding the advantages for existing campus-based students in their MOOC initiatives. Coursera foreground 'blended learning', in which they suggest 'partner institutions are using our online platform to provide their on-campus students with an improved learning experience' (2015). Similarly, edX propose:

> Our goals, however, go beyond offering courses and content. We are committed to research that will allow us to understand how students learn, how technology can transform learning, and the ways teachers teach on campus and beyond' (edX 2015b).

Such positions reveal Coursera and edX's vision of the MOOC to be, not simply the flourishing of a universal online education, but rather a two-tier system in which elite and inaccessible campuses are maintained at the core and online offerings serve the periphery. Moreover, such a commitment to research appears to position MOOC offerings as a resource for professional development, rather than a genuine attempt to disrupt institutional practices. One must then ask, who is in receipt of the greatest benefit from these MOOCs: the hundreds of thousands of participants earning a certificate, but no academic credit, or the institutions harvesting unprecedented quantities of MOOC data in order to reinforce their position as providers of reputable education.

One might then argue that the images of campus real estate signal, not the death of the institution, but its preservation. Heading each institutional webpage, prefacing MOOC participation, they are a defiance of the spatial disruptions of the digital. However, more than the specifics of each image, they collectively work to maintain a view of educational space as static, bounded and regional, in opposition to which the MOOC can remain immaterial and 'virtual', and hence unaccountable to the specifics of the numerous material contexts in which they are enacted. Not only are the images of the university campus inadequate for understanding the complex interminglings of institution, Internet infrastructure, software, locality, teacher, and student that come together in the co-constitution of MOOC activity, but they also obscure the actual conditions and contexts of participation.

Crucially however, this must be understood as a spatial ordering that is produced and conditioned by an underlying, humanist-informed subject | object dualism. Where agency is attributed exclusively to the human subject, and space is cast as the passive backdrop to individual and social activity, the binary of absence | presence is maintained. In other words, the notion of bounded and regional space that is external to 'us' creates the very conditions of exclusion and inaccessibility, because one can only ever be 'in' or 'out'. The

image of the campus merely visualises the enclosed place that the majority of MOOC participants will never enter. In this way, the MOOC reinforces the distance and exclusion that it elsewhere claims to overcome.

Sociomaterial space

A posthuman perspective might engage theories from the 'spatial turn', to encourage questions about 'how subjectivities are negotiated through movements and locations' (Fenwick et al. 2011, p 129). Rather than beginning with human essence as the structuring foundation of educational space, such a perspective opens possibilities for tracing the specific relational conditions through which MOOC activity unfolds. Where the space of the MOOC is considered in terms of '[h]ybridity rather than homogeneity, and the relational rather than the bounded' (Fenwick et al. 2011, p 146), a more productive view of the concrete material and spatial contexts of participation might be approached. However, one must caution against an oppositional or emancipatory stance here. The spatial might be productively considered in terms of 'mobilities and moorings' (Fenwick et al. 2011), that is, a fluidity between the sedentarism of the institutional and the mutability of the digital. Nevertheless, such specificity might work against the grand narratives of the nostalgic campus and the universal desire for education, generalities which limit our understandings of technological change.

Rather than a determinist or dialectical relationship, we might look to intra-action as a way of approaching the entanglements of humans and technology in the MOOC. Rather than the maintenance of the elite campus and the assumptions of a static universal population, research might look to explore the co-constitutive alterations between the global and the local, the world-wide and the institutional. The provision of open and globally accessible education re-structures and re-articulates both the institution and the external MOOC organisation, and it is such perspectives that might productively accompany the accounts of emancipatory broadcast education. The productive question that might then be asked, is not what the elite educational institution can do for a universal population in deficit, but how the diversity of global participation can change the very idea of the university (Knox 2014b).

Elsewhere I have described the spatial qualities of a particular MOOC in terms of the intra-acting relationships between human participants and the operation of web algorithms (Knox 2014c). This, I suggest, is a productive way to avoid the limitations of determinist positions, and the pitfalls of technology instrumentalism. MOOC participants condition and are conditioned by the digital, and it is the particularities of these intra-actions that will develop our understanding of technology-infused, yet actual and concrete educational activity. Avoiding the emancipatory promises of the 'virtual', the posthuman is thus 'materialist and vitalist, embodied and embedded, firmly located somewhere' (Braidotti 2013, p 51).

Time, speed and efficiency

References to time in the promotion of the MOOC centre around two principle, yet somewhat incoherent ideas: firstly the claim that MOOCs 'speed up' the educational process, and secondly that they offer a more 'flexible' form of participation. This section

asks: to what extent established temporal rhythms in education are disrupted by the technology of the MOOC?

In declaring: 'It's simple. We want to help you learn better and faster' (Coursera 2015), Coursera appear to maintain the well-established promise of temporal efficiency wrought through technological means. Here then the MOOC is framed as the means through which a traditionally lethargic education system can finally match the pace of wider society. Specifically for education, this reflects a broader and well-established discussion around the 'unsettling of the university', in which increasingly pervasive digital technologies disrupt academic and administrative routines (Land 2011). However, in order to fully understand what is 'disruptive' in this scenario, the ideas around technologically induced speed need to be interrogated further.

One of the ways we might understand this situation is, not simply the attempt to negate time through acceleration, but rather a desire to preserve it. Indeed, as Walker claims, the 'cult of speed' so often attributed to the technology-infused compression of time in a late capitalist society can be better understood as a 'cult of efficiency' (2009, p 498). Tracing this distinction back to the dividing lines of determinism, we might say that the idea of 'speed' in and of itself reflects the technological determinist stance of an 'outside' force of machinic tempo encroaching upon our authentic human rhythms, while 'efficiency' seems to imply a level of utilisation and control, such that speed is given some kind of 'human' purpose. Technology means that we can achieve more of what we think needs to be achieved. As Levy insightfully discusses, particularly in relation to the work of Vannevar Bush, there is a well-established account of technology as labour-saving device (2007). This narrative extends from the mechanistic labour-saving of physical human activity into the economisation of human thought itself. However, such 'tools' conform to a hierarchy of cognition; automated systems are assigned to perform the mundane chores of searching and sorting, or 'routine thinking' (Levy 2007), such that surplus time can be devoted to the tasks of reflection and contemplation, or 'creative thinking' (Levy 2007).

However, this ingrained framing of technology as labour-saving device seems to maintain an authentic flow of time, rather than disrupt it. Efficiency means that more tasks can be achieved within the same period as the result of the technological management of productivity, but the period itself is preserved. Technology is positioned as operating within its own time: fast time, and takes on the burden of the accelerated pace of life, such that its users can maintain an authentically human rhythm. If this is how speed and efficiency are to be understood, not only is the separation of human and technology assumed and maintained, but the former defines the very character of time itself.

Returning to the 'better and faster' promised by Coursera (2015), we might then understand this to mean a 'greater efficiency', in which the MOOC itself relieves the student of the pressures of fast-time, and works to maximise the periods in which the already established 'human' pace of learning can take place. Therefore, we might understand this, not only as a position of technology instrumentalism, but more fundamentally the preservation of an authentic human temporality necessary for learning to take place. This divorcing of the technological and the human is evident in the educational psychology that Coursera use to underpin their approach: that of 'Mastery Learning', attributed to Benjamin Bloom (2015). This theory of learning, it is claimed, 'helps learners fully understand a topic before moving onto a more advanced topic' (Coursera 2015). It is nothing other than the pace of the individual student that therefore defines the speed of the learning assumed to be taking place. Moreover, the linear nature of our temporality is also preserved here, casting the process of learning as strictly developmental and sequential.

Therefore, while broader discussions of technology in education often frame the digital as deeply implicated in the disrupting of established divisions, such that 'both time and space [are] relative to the technology we use to undertake such a transaction' (Walker 2009, p 489), this is precisely not what we find in the promotion of the MOOC. Time remains firmly relative to the notion of a developing human subject, undertaking a process of 'learning' that are linear in nature and situated entirely 'within'. Technology cannot directly speed up the process of learning because it is positioned very clearly as external to an exclusively human rhythm. It can speed up access to content, and assist in the management of time, but 'learning' itself remains locked in the framework of the bounded human subject.

But what if we were to interpret 'speed' and 'efficiency' differently, and engage further with the critiques of technology that contend with notions of 'neo-liberalism' and 'globalisation'. From such a perspective, speed and efficiency might not be located so far apart in the determinist spectrum, but rather might both be understood as the 'effects' of capitalism. In other words, this critical stance is that the 'fast and better' of Coursera is an imposition upon education, not a desire.

Globalisation and the neoliberal critique

MOOCs, one might argue, are a marked example of the ways in which higher education continues to exhibit market-like behaviours in a world increasingly driven by the 'fast time' of globalisation and late capitalism, for which there is a significant body of literature (for example, Clegg et al. 2010). MOOCs would seem to resonate with the 'new flows of knowledge (or circuits of knowledge)' and 'interstitial and intermediating organizations' required for Walker's notion of 'academic capitalism' (2009, p 493); being educational offerings that ostensibly 'open' university teaching to wider audiences (and teachers), and enfold third-party and often for-profit organisations in their delivery. 'Faster and better' might then be understood to align the MOOC with a broader intensification of labour and a 'tyranny of the immediate' (Massey 2002). Notwithstanding such claims, less attention has been given to the influence of the humanist subject on the capitalist restructuring of time in higher education, for which the emergence of the MOOC presents a salient point of discussion.

Once again, it is useful to suggest the determinism one might read from the idea that some form of 'networked time', derived from the merging of globalisation and networked technologies, ushers in a new lived temporality. Claims of globalisation habitually identify it as an external force, often bound up with technological change, and set to impact disastrously on the unprepared education sector. Indeed, media claims of a 'global thirst for education' (Tickle 2014), or the international desire for 'foreign' provision (Marginson 2012) predict catastrophe for the locally focussed institution, for which the MOOC is often framed as a solution (Barber et al. 2013). In the provocatively titled '*An Avalanche is Coming*', Barber et al. include 'globalisation' fifteen times, consistently implying the imminent destruction of higher education by an outside influence, however the term is never defined (2013). Perhaps more than a spatial incursion, we might understand this 'globalisation' as an ordering of fast-time, set to restructure the educational institution around the efficiency regimes necessitated by global capital. Speed then is not the advantageous efficiency-gains of tool-use, but a negative pace imposed upon education from outside pressure. In other words, this is a literal speeding-up of education, where technology directly *accelerates* rather than *saves* time for genuine human reflection and

contemplation. For Land 'fast time drives out and occupies the place of slow time' (2011, p 64).

While this may be a legitimate line of critique for discussion of the MOOC, my point is to highlight that it maintains, privileges and justifies the same authentic human condition defended by advocates of technological efficiency. The problem is precisely in the tendency to position technology (and 'globalisation') as an external factor, impacting upon and determining the exclusive temporality of human conduct. Thus critical responses to the vocationalisation of education, or to the idea that students must submit to the external requirements of an accelerated 'knowledge economy' simply default to the preservation of an authentically protracted human pursuit of intellectual betterment. Such self-determinism is simply the other side of the opposition in which one's life is governed by an exterior and technologically infused global capitalism.

Flexibility

The other principal reference to time in MOOC promotion relates to ideas around 'flexibility', and it is through this framing of time that we can begin to perceive the broader structuring influence of technology.

While edX's website claims: 'Our virtual "classroom" is open 24/7 and everyone is accepted' (edX 2015a), Coursera advertise a three step process: 'discover a course and sign up today'; 'learn on your own schedule'; and 'achieve your goals' (2015). The foregrounding of such a flexible approach to study would seem to challenge the established 'clock-time' of the modern university (Walker 2009). Indeed this is precisely the disruptive quality one is supposed to understand from advocates of the MOOC. We might understand this flexibility to reflect Bauman's 'liquid modernity' (2000) in which the boundaries between study, work and leisure become thoroughly blurred. Indeed, the alignment of MOOCs with 'a lifelong education' (Coursera 2015) reflects a broader discursive shift in the way education has been framed in recent decades; towards a 'learning society' justified through the assumed plasticity of 'lifelong learning' (Edwards 1997). As an established body of work has demonstrated, it would be a mistake to view such flexibility in education as necessarily emancipatory (Harris 2011; Nicoll 2011; Edwards 1997). For this paper, I want to focus very specifically on the assumptions about the human subject that ground the promotion of flexible time in the MOOC. So while the distinct and regimented time of the educational institution might indeed be dissolved with the promise of '24/7' access, what is identified in its place is not timeless, nor an escape from time. Rather, the self-directing an autonomous student that is substituted for clock-time in the MOOC, also carries with it a number of assumptions about the unfolding of educational time.

Instead of the mechanical tempo of the machine, the pace of the MOOC seems to be governed by the assumption of a particular kind of human being. Where edX frames the MOOC as 'offering opportunity to anyone who wants to achieve, thrive, and grow' (edX 2015b), we might understand this human being to be one that develops, unfolds and realises their innate potential as a self-directed, life-long learner. Perhaps unsurprisingly, there is no consideration of the broader acceleration of time in this promotional material. We might then say that the technological determinism of Fordism has been replaced with the *self-determinism* of the autonomous human subject. Once again, an exclusively human tempo is front and centre. Significantly, despite the international reach apparent in the maps of MOOC enrolment, as discussed previously, this rules out the notion of 'global

time', in which time is relative to and dependent upon relations with others across the time-zones (Castells 2000). It is not just a 'human time' therefore, but an *individual* time, one that is apparently unrestricted by external influences, human and non-human alike.

Becoming and MOOC subjectivity

The paradox in MOOC promotion is of course that one cannot be autonomous in education without the platform technology. A much more productive perspective is therefore to recognise the co-constitutive relations between the human and the technological. In this sense 'efficiency' must be understood to take on an additional inflection alongside 'flexibility': not just the 'saving' of time, but the shaping of conduct. Bound up in the very framing of laboursaving 'tools' are also the preconditions for how one's conserved time is to be lived. The rhythmical incursion of the MOOC is therefore not simply the external force of a machinic rationality, but also a 'technology of the self' (Martin 1988); the self-disciplining of one's temporal existence. The MOOC can therefore be understood as the latest in a long line of 'e-learning' projects that work to construct the subject as a flexible life-long learner (Nicoll 2008, 2011). The point to highlight here is that any disruption in time brought about through MOOC technology must be understood to be conditioned by the assumption of an autonomous humanist subject; in the sense that MOOC participants structure and are structured by the technology.

A posthuman perspective offers one way of interrogating this relationship, to offer a more productive view of MOOC subjectivity. The problem with the rhetoric of temporal autonomy is that is masks more complex understandings of time. As Walker contends, the 'sense of being unable to control time coupled with the normative assumption that we should control, and in fact master it, creates a paradox which manifests itself in heightened feelings of anxiety and powerlessness' (Walker 2009, 488). Rather than the developing humanist subject, assumed to unfurl a latent potential for autonomy and mastery, education might look to the concept of becoming (Deleuze and Guattari 1987). '"Becoming" works on a time sequence that is neither linear nor sequential because processes of becoming are not predicated upon a stable, centralized Self who supervises their unfolding' (Braidotti 2011). This posthuman subjectivity is thoroughly decentred, and rejects 'the progress of mankind through a selfregulatory and teleological ordained use of reason and of secular scientific rationality allegedly aimed at the perfectability of "Man"' (2013, p 37). In other words, it is the immanent process of relational co-constitution that forms change, rather than the transcendent and preordained ideal of the rational and autonomous subject. Such a stance recognises the ways we are shaped through our involvements with technology, but also opens possibilities for our responsibility and relational-agency within such processes. The resulting rhythms of the self-directing MOOC participant might then be understood as an ongoing diffraction involving both the pace of the technological and the pulse of human conduct.

Conclusions

The point of this paper is not to argue that MOOCs have failed to disrupt education, but rather that the quality and scale of that disruption is significantly limited by an underlying framework of the humanist subject. This is not a trait of MOOCs specifically, but the

legacy of an education deeply embroiled in foundational assumptions about the human condition. Education is the foundational and most significant system of subjectification in society. We become (a particular kind of) human through (a particular kind of) education. As Stiegler contends, 'educational systems are, above all, the places where calendary and cardinal devices are learned and interiorised' (2003, no pagination). However, in this very same sense, education is therefore at the very epicentre of intensifications brought about through the digital.

> Today, when automated understanding and a certain schematisation of the cultural industries are beginning to converge, this educational system with its nineteenth-century roots – a system inspired by seventeenth- and eighteenth-Century ideas and used as a device for internalising the prostheses that form the history of knowledge and of the 'we' (understood as universal consciousness distinct from national histories) – is challenged by the transformation of the technical system into a planetary industrialised mnemotechnical system of retention.. And with it *'consciousness' (as such) is challenged*. (Stiegler 2003, emphasis original)

Nevertheless, as I have demonstrated, if the digital does indeed signal a period of profound technological change for education, then the MOOC might be considered to maintain orthodoxy as much as it disrupts it. The narrative that accompanies the MOOC appears to continue a well-established educational concern for the flowering of the rationale subject, the unveiling of an inner human spirit, and the realisation of an emancipatory self-direction and autonomy. However such commitments structure-in a foundational dualist orientation that drastically limits how we can understand technological change, and ensures the fundamental separation and marginalisation of space and time. The subject is the precondition for the idea of regional and bounded space, and the necessary exclusion and inaccessibility that ensues, and also the masking of time, such that the powerful temporalities of global education are overlooked in favour of a self-directing, autonomous learner.

Looking beyond determinist positions related to technology may be uncomfortable for an education that is historically bound to the universality of a rational and self-directing humanist subject. However, avoiding the banality of recurring dualist or dialectical arrangements, a posthuman perspective opens education to new and profound possibilities, not only for understanding the complex entanglements of global educational activity, but also to envision the kind of ethical and relational practices that we might want to enact in the future. Posthumanism is not necessarily the denial of the subject, rather the 'new knowing subject is a complex assemblage of human and non-human, planetary and cosmic, given and manufactured, which requires major re-adjustments in our ways of thinking' (Braidotti 2013, p 159). Education must begin to contend, not with a simplistic instrumentalism that views technology as both external and neutral, but with the idea that we co-evolve with the 'technicity of tools and external archival mechanisms (such as language and culture)' (Wolfe 2010, pxv in reference to the work of Stiegler). In other words, it is the human | non-human distinction that must become the very focus of educational activity; 'a site for political and ethical accountability' (Braidotti 2013, p 102).

References

Badmington, N. 2000. *Posthumanism*. Basingstoke: Palgrave.

Bauman, Z. 2000. *Liquid Modernity*. Cambridge: Polity Press.

Baggaley, J. 2014. MOOCS: Digesting the facts. *Distance Education* 35(2): 159–163. http://www.tandfonline.com/doi/abs/10.1080/01587919.2014.919710. Accessed 24 July 2014.

Barad, K. 2007. *Meeting the universe halfway: Quantum physics and the entanglement of matter and meaning*. London: Duke University Press.

Barber, M., K. Donnelly, and S. Rizvi. 2013. *An avalanche is coming: Higher education and the revolution ahead*. Pearson: Institute for Public Policy Research.

Bates, T. 2014. Time to retire from online learning? [Blog post]. Online learning and distance education resources. http://www.tonybates.ca/2014/04/15/time-to-retire-from-online-learning/.

Bayne, S., M.S. Gallagher, and J. Lamb. 2014. Being 'at' university: The social topologies of distance students. *Higher Education* 67: 569–583.

Bayne et al. 2012a. Images. http://edinspace.weebly.com/images.html.

Bayne et al. 2012b. Postcards. http://edinspace.weebly.com/postcards.html.

Braidotti, R. 2011. *Nomadic theory*. New York: Columbia University Press.

Braidotti, R. 2013. *The posthuman*. Cambridge: Polity Press.

Breslow, L., D.E. Pritchard, J. DeBoer, G.S. Stump, A.D. Ho, and D.T. Seaton. 2013. Studying learning in the worldwide classroom: Research into edX's first MOOC. *Research and Practice in Assessment* 8(2): 13–25.

Castells, M. 2000. *The rise of the network society*, 2nd ed. Malden, MA: Blackwell Publishers.

Chandler, D. 2002. *Technological determinism*. Web essay, Media and Communications Studies, University of Aberystwyth.

Clegg, S., A. Hudson, and J. Steel. 2010. The emperor's new clothes: Globalisation and e-learning in higher education. *British Journal of Sociology of Education* 24(1): 39–53.

Coursera. 2014. Our vision. https://www.coursera.org/about.

Coursera. 2015. About page. https://www.coursera.org/about/.

Dahlberg, L. (2004). Internet research tracings: Towards non-reductionist methodology. *Journal of Computer Mediated Communication* 9/3. http://jcmc.indiana.edu/vol9/issue3/dahlberg.html.

Davies, T. 1997. *Humanism*. London: Routledge.

Deleuze, G., and F. Guattari. 1987. *A Thousand Plateaus: Capitalism and Schizophrenia*. Minneapolis: University of Minnesota Press.

Edwards, R. 1997. *Changing places?: Flexibility, lifelong learning and a learning society*. London: Routledge.

edX. 2015a. How it works page. https://www.edx.org/how-it-works.

edX. 2015b. About page. https://www.edx.org/about-us.

Fenwick, T., R. Edwards, and P. Sawchuk. 2011. *Emerging approaches to educational research: Tracing the sociomaterial*. Abingdon: Routledge.

Fuller, S. 2011. *Humanity 2.0: What it means to be human past, present and future*. Basingstoke: Palgrave Macmillan.

Gaebel, M. (2013). MOOCs: Massive open online courses. *European University Association*. EUA occasional papers. http://www.eua.be/Libraries/publication/EUA_Occasional_papers_MOOCs.

Giannella, E. 2015. Morality and the idea of progress in silicon valley. *Berkeley Journal of Sociology*. http://berkeleyjournal.org/2015/01/morality-and-the-idea-of-progress-in-silicon-valley/.

Haggard, S. 2013. The maturing of the MOOC: Literature review of massive open online courses and other forms of online distance learning (BIS Research Paper No. 130). London: Department for Business, Innovation and Skills. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/240193/13-1173-maturing-of-themooc.pdf.

Harris, D. 2011. The paradoxes of flexible learning. In *Flexible pedagogy, flexible practice: Notes from the trenches of distance education. Issues in Distance Education Series*. eds. E. Burge, C. C. Gibson & T. Gibson, 275–284. Athabasca: Athabasca University Press. (Paperback 978-1-926836-20-1, eBook 978-1-926836-21-8).

Johnston, R. 2009. Salvation or destruction: Metaphors of the Internet. *First Monday* 14(4). http://firstmonday.org/ojs/index.php/fm/article/view/2370/2158.

Kant, I., 2010. Kant on education (Ueber Paedagogik), The Online Library Of Liberty: Liberty Fund. http://files.libertyfund.org/files/356/Kant_0235_EBk_v6.0.pdf.

Kanuka, H. 2008. Understanding E-learning technologies in practice through philosophies in practice. In *The Theory and Practice of Online Learning*, ed. T. Anderson, 91–118. Edmonton: AU Press.

Knox, J. (2014a). The Global Institution, the Homely, and the Overwhelming: (per)forming three MOOC spaces. In 9th international conference on networked learning 2014, eds. S. Bayne C. Jones C, M/de Laat, T. Ryberg & C. Sinclair C.

Knox, J. 2014b. Digital culture clash: 'Massive' education in the E-learning and digital cultures MOOC. *Distance Education Special Issue on Massively Open Online Courses*. doi:10.1080/01587919.2014.917704.

Knox, J. (2014c). Active algorithms: Sociomaterial Spaces in the E-learning and digital cultures MOOC. Campus Virtuales, University in the Cloud special issue, 3(1).

Knox, J. 2015. What's the matter with MOOCs? Sociomaterial methodologies for educational research. In *Digital methods for social science*, ed. H. Snee, C. Hine, Y. Morey, S. Roberts, and H. Watson. Basingstoke: Palgrave Macmillan.

Knox, J. 2016. Posthuman openings: Looking beyond technology instrumentalism. In *The philosophy and theory of open education*, eds, M. Deimann & M.A. Peters. New York: Peter Lang Publishing.

Land, R. 2011. Speed and the unsettling of knowledge in the Digital University. In *Digital difference*, ed. R. Land, and S. Bayne, 61–70. Rotterdam: Sense Publishers.

Marginson, S. 2012. Yes, MOOC is the global higher education game changer. *University World News*. http://www.universityworldnews.com/article.php?story=2012080915084470.

Martin, L.H., 1988. Technologies of the self. In *A seminar with Michel Foucault* ed. L. Martin, H. Gutman, and P. Hutton, 16–49. Amherst: University of Massachusetts Press.

Massey, D. 2002. Editorial: Time To think. *Transactions of the Institute of British Geographers* 27(3): 259–261.

MOOCs@Edinburgh Group. 2013. MOOCs@Edinburgh 2013—Report #1. https://www.era.lib.ed.ac.uk/bitstream/1842/6683/1/Edinburgh_MOOCs_Report2013_no1.pdf.

Morozov, E. 2013. *To save everything, click here: Technology, solutionism, and the urge to fix problems that don't exist*. London: Allen lane.

Nesterko, S., Kashin, K., Reich, J., Seaton, D., Han, Q., Chuang, I., Waldo, J., Ho, A., 2013. HarvardX insights. http://harvardx.harvard.edu/harvardx-insights.

Nicoll, K. 2008. Discipline and e-Learning. In Fejes and Nicoll 2008, *Foucault and Lifelong Learning: Governing the subject*. 164–177.

Nicoll, K. 2011. What happens in the stretch to flexibility? In *Flexible pedagogy, flexible practice: Notes from the trenches of distance education. Issues in distance education series*, eds. E. Burge, C. C. Gibson & T. Gibson, 386–403. Athabasca: Athabasca University Press. (Paperback 978-1-926836-20-1, eBook 978-1-926836-21-8).

Perna, L., Ruby, A., Boruch, R., Wang, N., Scull, J., Evans, C., Ahmad, S. 2013. The life cycle of a million MOOC users. MOOC Research Initiative Conference. http://www.gse.upenn.edu/pdf/ahead/perna_ruby_boruch_moocs_dec2013.pdf.

Rodriguez, O. 2013. The concept of openness behind c and x-MOOCs (Massive Open Online Courses). *Open Praxis* 5(1): 67–73.

Shirky, C. 2012. Napster, udacity, and the academy. http://www.shirky.com/weblog/2012/11/napster-udacity-and-the-academy/.

Stiegler, B. 2003. Our ailing educational institutions. *Culture Machine* 5. http://www.culturemachine.net/index.php/cm/article/viewArticle/258/243.

Tickle, L. 2014. Are MOOCs the best chance we have to satisfy a global thirst for education?. The Guardian Education. http://www.theguardian.com/education/2014/jan/20/moocs-global-thirst-education.

Udacity. 2015. About Us page https://www.udacity.com/us.

Universities UK. 2013. Massive open online courses: Higher education's digital moment? https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/240193/13-1173-maturing-of-the-mooc.pdf.

Walker, J. 2009. Time as the fourth dimension in the globalization of higher education. *The Journal of Higher Education* 80(5): 483–509.