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The Politics and Poetics of Spaces and Places: Mapping the Multiple Geographies of Identity in a Cultural Posthuman Era

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As transcendent technologies, information communication technologies (ICTs) exist beyond the divergent equivalence of human categories of difference such as race, gender, and class, as well as operating outside traditional binary oppositions such as good/bad, love/hate, and rational/irrational. While a material grounding in earlier forms of embodied social experience remains a necessary prerequisite of interaction with virtual systems, a vast collection of technological applications now exhibit some degree of agency as they interact with humans and their environment. This development has enormous consequences for human life, human flourishing, and social organisation, raising significant ethical concerns relevant to public and policy debates. It is, therefore, pertinent to explore key epistemological questions relating to the radical and accelerated remapping of the limits of what it now means to be human. While this article does not purport to offer a pragmatic solution, it constitutes an interdisciplinary conceptual platform from which to consider the nature of the evolving human-nonhuman-machine relationship and the possible implications for humanity, civilisation, and other forms of social organisation in the modern hypermediated world. It is suggested that, by reflecting on the various representations of contemporary technoculture and biotechnology from the perspective of the arts and humanities, it may be possible to isolate those important questions which relate to subjectivity, ethics, community, and social transformation in order to prepare the groundwork for a comprehensive and critical theory of technology.

KEYWORDS posthuman, information communication technologies, hypermediation, culture, identity, transformation, social organisation, critical theory

Introduction

The largely unfettered realm of hardware and software codes offers limitless possibilities in expanding the use and influence of information communication technologies (ICTs), even facilitating various public and private activities relating to the involuntary involvement and surveillance of others, which are often beyond law and regulation. Aside from the problematic privacy implications of augmented reality glasses and self-driving cars, there are many constructive dimensions to the technosocial world, such as the life-saving integration of electronic and auxiliary biological systems, ranging from the invention of pacemakers and the construction of artificial hearts to replacement robot limbs which interact with the brain. Using functional magnetic resonance imaging, it is already possible to ascertain a great deal of information about an individual's brain activity and thought processes with a high degree of accuracy, which is invaluable in treating brain injuries. The Arab Spring is generally mooted to have spread due to the ubiquity and popularity of social media, specifically Facebook and Twitter, and exemplifies the potentiality for disaffected individuals to mobilise en masse online against repressive regimes of power. Although, since the final outcome is dependent on more tangible forces, the extent to which networked resistance can overcome hierarchical power is at best questionable. This tends to be a common complaint of online activists that shared discontents among members of the wired community do not often translate into tangible positive outcomes in lived experience. In any event, the energy needed to take to the streets and protest, particularly in Western countries, is often dissipated by having articulated those protestations online. Along with the soporific effect of information overload, this era is characterised not only by an increase in interrelations, integrating trends, and accelerated development but also by a growth in contradictions. From time and labour-saving digitised work patterns, which tend to overwhelm and enervate, to the development of nuclear power, which avoids harmful greenhouse gas emissions yet contains the seeds of humankind's destruction, technological advancements are too often achieved at the potential and actual cost of human health and happiness.

Propelled ever further from the initial conditions of the real world, an intensification of the information generation process is claimed by Baudrillard to signify the inevitable and irreversible 'critical threshold of universal instantaneity of information' (1995: 137). As advanced technological systems reproduce for the sole purpose of reproducibility — a controllable, encodable, and endlessly adaptable reproducibility in which the 'finality is there in advance inscribed in the code' — we are presented with an experimental facsimile of the catastrophic end of the universe (Baudrillard, 1993: 50). In *The Age of Spiritual Machines*, Kurzweil outdid Baudrillard by predicting the epoch of techno-transcendence, the tipping point at which human intelligence will be totally eclipsed by artificial intelligence. It is suggested that the virtual world is in the process of transforming the real world

or, at least, subordinating it as slave to the machine world. By the year 2029, genetic engineering, nanotechnology, and computer technology will have the capacity to create transhuman man-machine hybrids which will defeat human biology in its vulnerability to disease and death (Kurzweil, 1999). He further speculated that resistance to the march of machine logic was a futile exercise, as those renegade humans would be unable to meaningfully participate with the majority who will have been assimilated by the burgeoning posthuman technoculture. This enduring fear of 'singularity' is further explored in a recent film *Transcendence*, which questions the nature of identity, authenticity, and subjectivity as the real self merges with a digital self in the virtual realm to create an autonomous and hostile artificial intelligence (Pfister, 2014). As the imbalance of power between humans and the posthuman accelerates with each technological innovation, the anticipated epoch of the machine is depicted as both modern miracle and monster.

The common feature between this bleak dystopian view of the future and the present day is the growing inability of individuals to model their own identity and long-term prospects outside the possible contexts of various technological mediums. The infinite circulation of information which reshapes and creates new meaning undermines the importance of embodied creative processes and human reason as the locus for social change and regeneration. Furthermore, patterns of work and social life are expressed and facilitated via various technological media and a lack of access to these forms of communication equates to being ostracised to the wrong side of the digital divide. Baroness Neville-Rolfe said in a recent House of Lords debate that 'Broadband and mobile coverage have become essential utilities, like water or power. Without coverage it is like living in the old world without a post box or hot water'.¹ As social life becomes increasingly complex, the perfunctory blurring of boundaries between human and machine comprises a dangerous reductionism in the way we think about and readily accommodate the use of progressively sophisticated technological tools. Too often, without considering the societal or personal impact, 'people act in response to culturally transmitted ideas that are embedded in symbolic representations of structural information' (Yolles, 2010: 361). It is suggested, therefore, that any critique of ICTs must engage with these new hypermediated cultural forms, technosocial relationships and constellations of power as linear and continuous; whether in the form of, for example, discourse, metaphysics of presence, or meta-narratives. This article hopes to exemplify the utility of a philosophical overview by conceptualising the transformative power of technology and the implications for human agency, social organisation, identity, and social exclusion from the perspectives of post-structuralism, sociology, cyberculture, and science fiction.

The technological transformation of social space

Individuals do not occupy an undifferentiated social space. Aside from technological and economic criteria, cultural and symbolic distinctions such as literature, history, science, religion, economics, politics, and the law tend to constitute discrete worlds characterised by their own policies and modes of authority. These distinct fields are

historically conceived and, through various acts of interpretation, have acquired autonomy in the social sphere over important considerations such as whether to prioritise scientific rigour and originality over commercial gain or political expediency. Over time, each field has developed the ability to insulate itself from external forces and to maintain its own standards of evaluation above and against those of alternative or intrusive fields. For Foucault these discursive processes identify what is meaningful and constitute the local socio-historical material conditions that support and constrain disciplinary knowledge traditions (1980: 196–98). While the exercise of particular restrictions and realisation of future possibilities are imposed on those who engage with a particular field, the existing structures and practices are constantly challenged by others who would seek to modify the hierarchy and arbitrary imposition of identity within that discipline. The evolving influence of transnational migration and social mobility means the social milieu is a constant battleground between those who uphold those autonomous principles of judgement which define a particular field and those who would substitute heteronomous principles which allow the inclusion of new ideas and external influences. Civilisation, while providing the conditions for the existence and development of culture, relies on culture for its continuing existence and progression and is, therefore, fundamentally connected to technological advancement.

Both culture and civilisation are dependent upon the shared meanings that exist between individuals within a social space, which is at the same time a political space: a necessarily contested area in which individuals organise their ‘position’ in relation to others and against dogmatic classificatory schema, via practices of self-representation, as ‘part and parcel of their social reality’. The construction of social identity is then simply a matter of modifying or maintaining ‘reality’, so that individuals and communities are defined as much by their ‘perceived being’ or belonging, as by simply ‘being’ (Bourdieu, 1984: 564). For Bourdieu, this ‘ubiquitous state of conflict’, or competitive struggle, is what characterises collective human life. When the ‘dominated classes’ unselfconsciously accept the conditions imposed on them by the ‘dominant classes’ they are reinforcing the very structures that restrict and oppress them: ‘those who enter this chase, in which they are beaten before they start as the constancy of the gaps testifies, implicitly recognize the legitimacy of the goals pursued by those whom they pursue, by the mere fact of taking part’ (Bourdieu, 1984: 165). In other words, the dominated classes seek validation via the symbols of power and cultural status — those categories of value — which represent ‘hierarchies of legitimacy’ and identify them with a higher standing in society. Endorsement of the *other* is an integral part, therefore, of acknowledging the political subject because our identity depends on the recognition of others to the extent that ‘misrecognition can inflict harm, can be a form of oppression, imprisoning someone in a false, distorted and reduced mode of being’ (Taylor, 1994: 25). This struggle for recognition continues to be ‘the master principle of society’ because only by being granted a name, a place, and a function within a group or institution, can the individual hope to escape the ‘contingency, finitude, and ultimate absurdity of existence’ (Wacquant, 2008: 264). Meanwhile, the dominant group ensures the gap is always narrowed to prevent outsiders having access to equal privilege, power, and standing;

engaging in post-social practices of exclusion, facilitated by advanced security measures such as gated communities, public schools, members-only clubs, private airport lounges, and other restricted spaces of enclosure which prevent any encounter with the *other* or the real.

While the idea of a world directed by human laws and made great by human initiative, endeavour, and passion has to some extent been superseded, the idealised cyber-community is often purported to assume an antagonistic relationship with the real. The difference between human-directed principles and physically-bounded laws of nature versus the unlimited temporal and spatial possibilities of the internet presents a range of seemingly impossible dualisms: intuition and rationality, sensation and ideas, body and machine. Such differences, for Bourdieu, always produce a hierarchy which, in turn, triggers the endless dialectic of distinction and pretension, recognition and misrecognition, arbitrariness and necessity. New technologies are too often competitive with, rather than complementary to, the existing norms of the real world and are not readily subject to legal or moral censure. At any given time, an interconnected set of tracking devices captures our every action and, following the Snowden revelations and the US National Security Agency's 'Prism' debacle, the legitimacy of cybersecurity mechanisms versus privacy remains a contentious area — although the founder of Facebook, Mark Zuckerberg, famously claimed that privacy can no longer be relied upon as a 'social norm' (Greenwald & MacAskill, 2013; Johnson, 2010). While crime prevention is a legitimate aim, widespread surveillance and monitoring arguably are driven primarily by the concerns of government operating in an often orchestrated climate of fear, rather than as a response to the actual experience of crime (van Munster, 2011). In addition, the economic capital accumulated by the knowledge corporations allows the manipulation of reality and privileging of particular interests affecting political power, financial markets, consumer behaviour, employment policies, and welfare standards. It follows that the technologies and interests of those who 'own' and control them are embedded into what Fuchs describes as 'structures of domination' (2008: 114).

The locale of struggle is complicated by the absence or presence of specific physical properties so it is inevitable that the realm of inquiry has shifted from not only *who* has the capacity to influence the structures of power and principles of control but also *what* mediums are capable of upholding or changing the representation of reality, in mediating human experience and social interactions. It has been argued that contemporary consumption-focused, media-fixated, and event-driven culture has not only resituated but reimagined human relationships. People have been encultured into a variety of habits and understandings which are a source of both assimilation and alienation, comprising an agonistic alliance in which, vying for supremacy, one party assumes the other and both willingly engage in a conflictual relationship. Cyberculture, in common with other social practices, is a contested terrain and not immune from power struggles, biased information flows, or cultural hegemonic influences which control such areas as domain names, usage, bandwidth, speed and access — restrictions which contribute to the digital divide. As the traditional territories of social interaction have been disrupted and relocated, it is first necessary to explore the possibility of resistance and

positive transformative possibilities within the new normalising knowledge discourses of assimilation and global ICT hierarchies in order to prepare the groundwork for social critique.

Post-social technologies and emergence of the posthuman subject

The development of new technologies, scientific progress, and economic change has reimagined the dynamics of social space and the lived experience and created novel challenges, not least of which in relation to the transgressive human-nonhuman-machine interface. In light of this, epistemological questions relating to human exceptionalism or anthropocentrism and what it now means to be human have been explored via a diverse range of academic, scientific, aesthetic, and literary forms. In recent works, the traditional civilisational social model as a locus of thoughts, shared values, and interaction in relation to social justice, social cohesion, and political thought has been supplanted with the idea of the 'post-human', on which there are many views but little consensus. Some welcome the post-human landscape as a unique opportunity to 'critically and creatively [think] about who and what we are actually in the process of becoming' as well as affording the opportunity to forge 'multiple allegiances and new ecologies of belonging that can redefine cosmopolitanism' (Braidotti, 2013: 12, 183). Such opinions debunk the myth of humanity as an impossible ideal which has always excluded individuals who failed to fit the category of 'human' and so were denied the full panoply of legal rights and protections afforded to others. In the late-eighteenth century, for example, Western European single women were taught accomplishments such as music, needlepoint, and etiquette rather than academic subjects, and had few political, employment, or educational rights. Married women possessed no legal identity: they were unable to retain the services of a lawyer, make contracts, or even have rights over their own children. An overarching patriarchal model reserved power and privilege for men meaning 'not all of us can say, with any degree of certainty, that we have always been human, or that we are only that. Some of us are not even considered fully human now' (Braidotti, 2013: 1). The post-gender posthuman perspective despatches any hierarchical notion of the 'natural self' while presenting technosocial reality as one which may be free from biologically-based oppression. The fictional and real world imagery associated with the human-machine cyborg, however, tends to be predominantly hyper-masculine (Darth Vader, The Terminator, RoboCop, Iron Man, Neo from *The Matrix*, military applications of technoscience etc.). In conforming to modernism's patriarchal dualistic assumptions, this conception smuggles in another form of gender stereotyping. In addition, although becoming a cyborg would confer greater powers on individuals than those who remained human, the remaining humans would likely become a subspecies (Warwick, 2002: 157). For Hayles, the posthuman goes beyond body modification and metaphorical and actual biological limitations, as it esteems information over materiality and situates the body as a prosthetic extension of the mind, being characterised by four main assumptions:

First, the posthuman view privileges information pattern over material instantiation, so that embodiment in a biological substrate is seen as an accident of history rather than an inevitability of life. *Second* the posthuman view considers consciousness regarded as the seat of human identity in the Western tradition long before Descartes thought he was a mind thinking, as in epiphenomenon, as evolutionary upstart trying to claim that is the whole show when in actuality it is only a minor sideshow. *Third*, the posthuman view thinks of the body as the original prosthesis we all learned to manipulate, so that extending or replacing the body with other prostheses becomes a continuation of a process that began before we were born. *Fourth*, and most important, by these and other means, the posthuman view configures human being so that it can be seamlessly articulated with intelligent machines. (Hayles, 1999: 3, 34)

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If human consciousness can be uploaded as information and moved between bodies or computers in the manner of extropian Hans Moravec's theory of 'transmigration' in *Mind Children: The Future of Robot and Human Intelligence*, then the body is no longer of central importance. The removal of the line between machine, mind, and computer means there are no longer 'essential differences or absolute demarcations between bodily existence and computer simulation, cybernetic mechanism and bodily organism, robot technology and human goals' (Hayles, 1999: 3). This technological separation of mind and body has profound implications for culture and civilisation. Similarly for Foucault in *The Order of Things*, 'the idea of man', as human consciousness, morality, and existence, is profoundly historical and simply an effect of language, desire, and the unconscious. Fashioned by dominant discourses within which its authority was constructed and like a face drawn in the sand at the edge of the sea, he predicts the concept and 'era of man' as coming to an end (Foucault, 1970: 386, 387). This does not describe a world without humans, rather, it refers to a different understanding, an evolution, of what we understand by the concept of 'human'. This is an idea taken up by Baudrillard and McLuhan, who suggest that the ubiquity of digital media along with an attendant implosion of meaning in the media have destabilised any shared sense of reality and rendered the real world of objects and human experience obsolete. The effect of substituting the real with a world of signification or 'hyperreality' is claimed to have been so far-reaching as to permanently change human nature.

In his lecture on 'Aesthetic Illusion and Virtual Reality', Baudrillard expressed the view that, while there is always a hidden camera somewhere filming us without our knowledge, our entire life has taken on a 'video dimension' because of the more disturbing effect of the 'virtual camera' in our head (1997: 19). E.M. Forster's *The Machine Stops* depicts a technologically mediated individual who becomes so removed from nature that they no longer comprehend their total alienation from what is real; freedom of mobility has become synonymous with, even replaced by, maximum connectivity and utility (2011). The constantly updated iPad and smartphone exemplify the modern ideal of maximum mobility and utility, with a range of apps from pocket yoga to augmented reality (AR) urban exploration; using AR technology a walk in the park becomes a shopping experience allowing the user to browse, even feel, items on sale. Similarly, watching television, web-surfing, and playing chess with friends on different continents are all possible from the device,

replicating the home as a basis for engaging in such activities. Recently patented 'Google Glass', with bone induction technology, transforms the individual into a machine by interpreting visual and aural data encountered by the user, projecting this as a series of words and images via pop-ups onto a small screen worn as spectacles, obviating the need for the user to process the information for themselves. Featuring an integrated phone, internet connection, GPS, and camera, the user can take live photographs, share video with others, and web-surf via voice-activated commands while moving around in the physical social space. Aside from issues of privacy (surreptitious surveillance of unsuspecting others) taken to the extreme, this hypermobility reverses into immobility consequent on the loss of corporeal awareness and lack of autonomy, since almost everything can be conducted and interpreted by the device. For Merleau-Ponty, the body can adapt and extend itself via 'literal' or external devices and, after acquiring the ability to perceive the world through the device, it ceases to exist, having been absorbed, it now constitutes an essential part of what it means to be (1962: 440). A saturation of information and identity-shifting possibilities means that, while knowing and being everything at once is realisable, what is 'relative, concrete and particular in life' is destroyed and, most importantly, 'one is in contradiction with oneself' which leads to an incomplete sphere of existence (Kierkegaard, 2010: 62, 68).

While there is some anxiety over the loss of identity that may result from technological hypermediations of self and reality and a danger that social enterprise imagination and thought has become subjugated by the overarching technocultural imagination, it does not follow that all technological advancement is detrimental. As Foucault points out 'everything is dangerous is not exactly the same as [everything is] bad. If everything is dangerous, then we always have something to do [...] every day [we must] determine which is the main danger' (1997: 256). Ed Hutchins rejects the claim that cognitive science has even been able to model the formal, abstract, and symbolic higher functions of the human mind, in part because these are dependent on context, culture, and history (1995: 202, 363). Just as we encounter machines everyday which exceed the total of our cognitive capacity without any threat to our autonomy, such as satellite navigation systems and driverless cars such as the *Induct Technology Navia*, decision making is distributed between equal human and non-human participants without posing a threat or being anti-human. As Hutchins (1995) points out, however, it is only through embodied human effort and imagination that such smart devices have been conceived in order to improve our working, leisure, and home environments. Even though writers like Hayles have written about the body as a 'pattern not a presence' and contemplated the future disembodiment of information, she still reasons that social, technological, political, and cultural changes can be advantageous to a transformed humanity. As long as the human subject is conceptualised as autonomous with unambiguous boundaries, the complex interplay of both human and nonhuman can be viewed with optimism:

If my nightmare is a culture inhabited by posthumans who regard their bodies as fashion accessories rather than the ground of being, my dream is a version of the posthuman that embraces the possibilities of information technologies [...] that recognizes and celebrates

finitude as a condition of human being, and that understands human life is embedded in a material world of great complexity [...] If the posthuman could accomplish this, who would mourn for the human? (Hayles, 1999: 8)

This proactive approach also constitutes an embracing of technology, enclosing and enfolding it before it enfolds, overwhelms, and assimilates us. Clearly, between the Luddites and technophiles, there is an initial problem of classifying these new technosocial spaces and interfaces: as essential, a threat to the future of humankind or, as others claim, simply complex socio-political and economic contexts within which end users bring with them their own ethical and cultural complexities.

Symbolic social interaction, hypermediation, and transparency

Castells describes the newly emergent spatial form of social interaction which distinguishes and transforms social practices that inform and influence the network society as ‘the space of flows’, which facilitates ‘the material organization of time-sharing social practices that work through flows’ which are rooted in techno savvy urban structures (2000: 442, 447). Yet the city is not just a set of processes and networks, it is a discursive space which contains the possibility of enhancing sociability mediated by physical interconnectedness. Communities produce instinctive and tacit collective memories, founded on the concept of a poetics of space in which they have learned to live and flourish. The concept of a poetics of space implies meaning is given to a social space because of the social relationships forged between things and people; it is the expression of society (Lefebvre, 1991: 83). In this sense, societies construct and define meaningful space within which a lawful and peaceful society is ordered according to the consistent and constant performance of social habits, founded on a set of informal rules underpinned by values, which allow people to plan and organise their lives without undue interference in those of others. A multiplicity of elements of different kinds are so related to each other that ‘we may learn from our acquaintance with some spatial or temporal part of the whole to form correct expectations concerning the rest, or at least expectations which have a good chance of proving correct’ (Hayek, 1973: 36). As society is a spontaneous order, it follows that repeated social exchanges create expectations about how others will and ought to behave. While the dissolution of the traditional relationship between the public and private spheres has resulted in a modified sense of one’s place in the world in which the physical space no longer determines our social interactions and experiences, we still inhabit a physical locality, referred to by medium theorist Meyrowitz as a ‘glocality’ (1985: 107).

While glocalities provide a conveniently desituated context for any number of non-sequential and overlapping experiences via the interconnected global matrix of contemporary cultural phenomena, a downside is that, ‘as a result of multiple mediations of our experience, we can come to live in places without ever fully integrating into the place-defined community, such as the local government, local community groups or local religious organizations’ (Meyrowitz, 2005: 27). This new public space is constituted by anonymous spectators who have no first-hand connection with the event or issue, possibly no relevant expertise, or specialist skill, yet are

able to express an opinion or take a stand without assuming any responsibility for the consequences. Not only is their participation risk-free, since there is no commitment, there is also no threat of humiliation, loss, or disappointment. Individuals are free to engage in unconditionally anonymous and ephemeral encounters, without having to invest in a consistent or authentic identity; web life encourages commitment and consequence-free experimentation as only the self is relevant. While exemplifying certain characteristics of the postmodern alienated and decentred subject, for Marshall McLuhan this disposition is also dangerously narcissistic:

The youth Narcissus mistook his own reflection in the water for another person. This extension of himself by mirror numbed his perceptions until he became the servomechanism of his own extended or repeated image. The nymph Echo tried to win his love with fragments of his own speech, but in vain. He was numb. He had adapted to his extension of himself and had become a closed system. (McLuhan, 1994: 63)

The look-at-me, friend-me, follow-me popularity of Facebook, Twitter, and Instagram exemplifies the fascination by any representation of the individual in material other than themselves, creating the illusion of otherness when in reality this provides only a hall of mirrors which infinitely reflects back to one's own reflection. The phenomenon of the 'selfie' authenticates the self via images rather than relationships, and similarly reveals a desire for one's own productions rather than contact with authentic others. Just as Echo failed to distract Narcissus from his own likeness, individuals are losing their authentic sense of self and becoming in thrall to a temporary and artificial world. Like the social displacement of those drivers too distracted by texting or talking on their mobile phones to be able to steer properly or brake in time, Narcissus could not see beyond his own reflections and was insensate to the cries of the beautiful nymph Echo. The public performance of the mobile phone conversation is an example of narcissism and social displacement as the interaction occurs within a hybrid conversational place or 'third space', within which, like Schrödinger's cat, both parties are neither mutually present nor absent. When the user interacts with others via their digital communicative device in real time, the boundaries between the virtual and real sphere are dissolved; yet the presence of others seems irrelevant to either the volume of the exchange or personal nature of information being divulged by the person in the crowded train carriage, supermarket, or even cinema. This strident act of defiance against subtly-coded social norms is symptomatic of disorientation and disengagement within a previously conceded predictable (or predictably subdued) shared environment. The ubiquity of mobile communication devices means such acts of conspicuous conversation are routinely performed in public spaces, transforming the traditional private versus public nature of social contexts: 'the orientations of cell phones/new media truncate our reciprocal relation with the Earth, stunting our senses and incarcerating ourselves in a technosoliloquy' (Seegert, 2011: 47) In this way a complex network of communicative technologies not only mediates our everyday interactions, it also participates in and, to a significant extent, shapes the social.

Human social interactions have been modified in a variety of ways due to the socio-cultural impact of communication media:

- *change in social relationships* such as distance-working and web-based interaction with non-human agents
- *increased variety of contexts for social engagement* enlarging the possibility of different types of interaction, such as online dating and chat forums, and
- *creation of new social roles.*

We no longer use technology to facilitate communication in the workplace and between each other as friends and consumers, rather, the *way* in which we interact with the medium is altering our informal habits and culture. McLuhan claimed some fifty years ago that the dominant medium has a formative role in manipulating the way in which we perceive, understand, and interact with the ‘mass media’ which, in turn, has a profound effect on the world around us. This symbiotic relationship is summarised in his famous maxim ‘the medium is the message’ (McLuhan, 1964: 7). A saturation of news reports, entertainment broadcasts, and images sourced from global agencies representing a diverse range of events and issues increases the individual’s socio-cognitive repertoire. Yet, as Baudrillard claimed in *The Gulf War Did Not Take Place*, a hypermediated representation enables the creative reconstruction of an event so that it is neither real nor unreal: ‘the closer we supposedly approach the real or the truth, the further we draw away from them both, since neither one nor the other exists’ (1995b: 49). The event is reconstructed as spectacle and takes place in a new place, created by technology. Aristotle similarly observed in *Rhetoric* that all communication is persuasive communication. This daily diet of information delivered by increasingly recognisable media ‘personalities’ and ‘celebrities’ is held by McLuhan to increase the sense of disjunction from one’s own grounded *life-world* (within which significance and meaning are determined by our lived experiences):

[W]hen things come at you very fast, naturally you lose touch with yourself. Anybody moving into a new world loses identity [...] So loss of identity is something that happens in rapid change. But everybody at the speed of light tends to become a nobody. This is what’s called the masked man. The masked man has no identity. He is so deeply involved in other people that he doesn’t have any personal identity. (quoted in Benedetti & DeHart, 1996: 33–34)

To some extent, this is always the case in all social interactions: while the self is embodied it is not circumscribed but is continually renegotiated, ‘we must be others before we are ourselves’ and ‘existence precedes essence’ (Mead, 1964; Sartre, 1958). This is a recursive practice which binds individuals, uncritically, to the judgement of others, while, at the same time, the saturation of persuasive images, icons, indexes, and the phenomenon of ‘self-reflexive’ hypermediation mean that information is presented in a highly stylised and self-referential format which arguably avoids transparency. Like the imaginary world discovered in an encyclopaedia, in Jorge Luis Borges short story *Tlön, Uqbar, Orbis Tertius* (1982), it comprises an idealist society in which Tlön language has no nouns and replaces Spanish and French, material objects have no existence, and the main discipline is psychology because its citizens understand the universe as nothing but a series of intellectual processes. Yet the simple and coherent structure of this

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alternative world is so compelling that it has infiltrated and superimposed itself on our own: even the history taught in schools excludes real history. We are similarly flattered by the interface in which human achievement becomes a matter of being able to deftly switch between layers of windows displaying a myriad of perspectives. Those intangible aspects comprising the soul of technological mediums, media, and our relationship to them — who or what comes between the screen, content, and user — remains, therefore, largely unexplicated and even concealed, with implications for regulation as well as for culture and society.

Participatory technoculture: connected communities or digital divide?

The blurring of reality and the imaginary, being and appearance, knowledge and belief is commonplace as life has become organised around various enslaving communicative mediums, without which full participation in collective social life is impossible. Without doubt, the resettlement of immigrants within new online imagined communities can ease security concerns in both their country of origin and host society. In such cases, digital diasporas have been evidenced to facilitate identity negotiation and create communities and organisations that represent hybrid identities and encourage solidarity and material benefits among their members (Brinkerhoff, 2009). Such mobilities are fundamental to the reorganisation of space and time because of their capacity to re-order both. The web is a supreme exemplar of an agent of change as it provides, not least of all, a technosocial locus for new modes of expression and ways of thinking about oneself and others in the world, comprising a socially, rather than geographically, constructed ethnoscape. As a transcendent technology, it exists beyond the divergent equivalence of human categories of difference such as race, gender, and class, as well as operating outside traditional binary oppositions such as good/bad, love/hate, rational/irrational. The technospace provides the possibility of cultural deterritorialisation, providing an opportunity for disparate mobile groups such as immigrants, refugees, and travellers to create new identities out of ‘multiple possible existences’ (Appadurai, 1990: 287). The continuity and discontinuity of cultural practices between different spaces is then given greater emphasis rather than their differences and disruptive properties.

Communities are not only defined by their ideologies, membership, and affiliations, but also by their boundaries: who and what are included and excluded. So then computer illiteracy, lack of conforming to online community membership standards, language difficulties, or not understanding the norms of interaction in virtual spaces can all be barriers to full online participation. In 2013, the UK Department of Work and Pensions revised its welfare benefit system to be ‘digital by default’, meaning all applications for Universal Credit must be made online. Over seventy organisations representing councils, charities, trades unions, and housing associations have raised concerns, including community charity *Citizens Advice* which warned: ‘this risks causing difficulties to the 8.5 million people who have never used the Internet and a further 14.5 million who have virtually no ICT skills’ (ONS *Statistical Bulletin*, 2011). Although telephone and some face-to-face

assistance were available at the outset, many claimants are elderly, disabled, or homeless and this initial provision has not made the claims process any easier, as the following case illustrates:

Like many claimants we work with, the gentleman in question had never used a computer before. This made it a much more laborious process. First, we had to set up an email account so that he could receive communication about the success or failure of his application. It soon became apparent that he did not know how to use a mouse. Following a quick tutorial, we then proceeded to set up an account on the local authority's homepage to update his application. After about an hour and a half together he had a vague understanding of the notification system, but he was still keen to return to us for help in checking his emails. Sadly [we] don't have the capacity to do this. I informed him that he would have to use the free computers next door in the library, but I'm not convinced he'll manage to do it alone. (Price, 2014)

Comprising an infinite set of sub-cultures within an overarching technoculture, the possibility of multiple geographically-unbounded social encounters based on a plethora of common causes and shared interests has led to the web being described as the ultimate connected society or 'Big Society'. So, as informational needs grow so does the need for research into appropriate redistributive models which are capable of recognising and addressing the needs of educationally and culturally disadvantaged groups, along with the increasing ranks of low-income users, who arguably have the most to benefit from enhanced internet flexibility and fair pricing of devices, bandwidth, and speed. Although some practical improvements have been made, for example, the availability of more computers for general use in public libraries, the development of a more advanced conceptual vocabulary is necessary if the vision of a fully-inclusive online society is to be realised.

For the fully-connected, the emphasis remains only on the instrumental nature of humanity, in terms of satisfying the barest needs from human relations, which recalls the spectre of *homo economicus*, who knew exactly what he was looking for. In an environment of commodities and needs-related exchange value, for Baudrillard, the person themselves becomes no more than commodity and exchange value. If shared intimacies are the goal and product of human interaction, then the idea of collections of lone individuals tapping 24/7 on an infinite number of ubiquitous digital screens comprises no more than a syndicate of egoisms. For Beck:

What emerges from the fading social norms is a naked, frightened, aggressive ego in search of itself and an affectionate sociality [...] someone who is poking around in the fog of his or her own self is no longer capable of noticing that this isolation, this solitary-confinement of the ego is a mass sentence. (Beck, 1995: 40)

The opposite of close familiarity gleaned from authentic presence, atomised behaviour characterised by an insidious form of individualism corrupts what it means to be social in the traditional sense: 'malnourished' individualised public spaces of anomie undermine the ideal of citizenship and citizenship-based politics.

According to Deleuze, we inhabit a world which is characterised by ultra-rapid and free-floating forms of social control. The coded numerical language of control not only determines availability or inaccessibility of information, but,

more significantly, by being so densely interconnected, individuals have become 'dividuals', in other words, endlessly divisible and sub-divisible 'samples, data, markets or banks' (Deleuze, 1992: 3). Facebook, for instance, while commonly represented as a transparent open space where individuals produce and control their own content, is a profit-oriented capitalist organisation which monitors all online behaviour by its 1.2 billion users. Like Google's ubiquitous search engine, 'private' data are captured and complex algorithms developed to create preference profiles which can be used for a range of purposes beyond targeted advertising: the consumer becomes the commodity. The type of person we are, our propensities and peculiarities, are detached from us and reconstituted in different ways beyond our control. Such reimaginings are based on those criteria considered relevant by the technological power elites: government or state-sanctioned agencies such as the NSA and GCHQ, corporate actors, or marketing agencies.

A main area of concern is that public discourse mediated by technology is mostly driven by corporate interests (news broadcasts as infotainment which confounds the possibility of public debate); individuals are unwittingly conspiring in the destruction of their actual human habitat and the gradual dissolution of society. For Bauman, public space has been colonised by private concerns as the public interest is reduced to mere curiosity about the private lives of others, while simultaneously public issues which resist such dilution are becoming all but incomprehensible (2006: 37). This is evidenced in the imposition of a self-interested corporate mindset which prioritises rapid mobility, flexible relations, and short-term investments, while simultaneously devaluing the spatial and social commitments which produced industrial epoch cities based on the idea of settled communities and career progression. The quest for standardisation, centralisation, and automation has created a society with greatly diminished social capital, in which people have little political influence and are discontented in their state of separation from the dominant (and largely self-determining) economic and legislative power bases (Shaw, 2013). Lingis refers to the increasing absence of humans from the strata of culture which functions as a system of signs as 'the obsolescence of the concept of human subjectivity in our sciences and our postmodern philosophy, the reduction of subjectivity to cybernetic circuitry, and the reduction of human initiative to the power to precipitate nuclear extinction' (1989: 1). Furthermore, the reimagining and recalibration of the fundamental concepts of democracy, freedom, fairness, and justice have exacerbated the imbalance of power, fostered feelings of alienation, and contributed to the destabilisation of society. As communication technologies have facilitated a reordering of the basic values of life, the individual has been reduced to an abstraction: genetic material having physical and psychic substance, technologically transformable, and comprising little more than a bare legal concept.

In this current climate of endless technological transformation, it is clear that any further innovations cannot be left to market forces without first considering the development of an appropriate monitoring mechanism. At a human level, rational thought processes restrain ideas which are by nature unruly and require control; similarly, the influence of ICTs has proliferated to the point where these technologies also need to be restrained and diluted into the real world in real time.

The normalising influence of controlling technologies

In the late 1980s, Chief Technologist at Xerox Mark Weiser shared his vision of ‘ubiquitous computing’ based on ‘calm technologies’ where computers would sense the informational and practical needs of humans and perform repetitive mundane tasks (Weiser et al., 1999). The new world would be a peaceful, comfortable, and aware environment in which intuitive machine technology would alert us to a shortage of fridge items and send a text reminder as we pass the supermarket, and programme AV equipment to play our favourite music on arriving home from work. Science-fiction writers have for some time been foretelling a world without crime where criminal activities are anticipated by intelligent machines enabling the pre-petrators to be apprehended as in Jonathan Nolan’s screenplay for TV network CBS, *Person of Interest*. Although a long way from calm computing, recent innovations in mobile technology supplemented by augmented reality, such as the Google Glass project, have moved us closer to the point where the line between real life and online life has blurred almost to the point of dissolution. Flesh and machine are not yet melded as in Philip K. Dick’s short story *Report*, made into Hollywood movie *Minority Report*; even so, it would be imprudent to underestimate the personal, social, and ethical consequences of any large-scale extension of ourselves. While machines do not determine different kinds of society, they are able to express the social forms capable of producing and making use of them. The idea of a continuous flow of a variety of information and instant communication could be construed as a tacit form of control, not least of which in its capacity to overwhelm and inhibit other, more tangible, forms of social contact. The structures and processes of digital change agents suggest new modes of thinking along with a new lexical map of meanings. These semantic relations are evident in relatively novel yet often vague concepts such as digital democracy, eGovernment, cybercrime, cyberculture, Web 2.0 and Web 3.0, or the ‘Semantic Web’.

Two conflicting schools emerge from speculation about technological advancements and future implications. The Utopians anticipate helpful robots, machines which take on the physically demanding, time consuming, and less intellectually engaging, boring, and repetitive tasks, along with those that assist in law enforcement, such as those envisaged by the *Robocop* franchise. The dystopians, alternatively, envisage a world in which human endeavour is rendered inferior or useless with people enslaved to the whims of the machines, resulting in a zombie apocalypse. Such a society is characterised by (1) an absence of privacy (physical impact), (2) lack of individual autonomy (intellectually/mentally restrictive), and (3) negative social and psychological damage to human relationships (emotional dimension). Various narrative accounts, particularly fantasy folklore and science fiction, predict ecological disaster and even the end of the world following the creation of many monsters. Whether or not these futuristic tales prove to be accurate predictions, they offer a device for ‘othering’ or defamiliarising the present by creating a *utopos*, a ‘no place’ or ‘good place’, within which to critique injustices and the misuse of power. Occasionally such stories prove to be prescient such as William Gibson’s description of ‘cyberspace’ in his 1986 *Burning Chrome* and George Orwell’s depiction of the destructive combination of political and technological

power in *Nineteen Eighty Four*, portraying a future in which a range of human and electronic surveillance agents spy on all forms of human interaction and communication. Legally-sanctioned hierarchical observation techniques permitted the monitoring and control of people in hitherto private situations with severe punishments meted out to those who offended ‘Big Brother’. Orwell’s writing eerily presages modern phenomena such as manipulation of the mass media, obsessive information gathering, and the widespread use of CCTV surveillance in modern Britain. Supported by legislation such as the Regulation of Investigatory Powers Act 2000 and the intrusive UK Communications Data Bill (currently before Parliament), the technologies constitute a legally and technically unlimited ‘panoptic power’ which functions as an inducement to conforming behaviour: an anticipatory conformity. The normalising influence of the electronic evaluative process means power is assured as, even when there is nobody asserting it, the exaggerated visibility of the subject presents a continual risk of shame and humiliation.

In support of his view that science and technology would eventually obliterate nature, Baudrillard refers to the 1953 Arthur C. Clarke short story *The Nine Billion Names of God* which describes a project undertaken by Tibetan monks to decode and list all the names of God as they believed this was the ultimate purpose of creation, and once the naming was complete then God would end the Universe. To write the names out by hand would take many centuries, so, with the help of two Western computer engineers, they devise a program for their Automated Sequence Computer Mark V which will complete the exercise within three months. Confident in their belief that nothing will happen, the engineers plan their return to civilisation to coincide with the final print run. As the final names are printed and the pair are standing in an airfield awaiting their plane, they notice ‘overhead, without any fuss, the stars were going out’ one by one (Clarke, 2001: 417–22). The story characterises humankind as moving towards a final resolution which is absolute catastrophe and death, accelerated by technology. The exhausted monks assign all their efforts and actions through history to a machine which transforms their energies and substance into pure data, resulting in the eventual disappearance of the world. Baudrillard claims the rise of our reliance on technology is purposive because it represents an abdication of the responsibility to nurture our own intelligence through gaining knowledge. He explains:

[I]f men create intelligent machines, or fantasize about them [...] it is because they secretly despair of their own intelligence [...] By entrusting this burdensome intelligence to machines we are released from any responsibility to knowledge, much as entrusting power to politicians allows us to disdain any aspiration of our own to power. (Baudrillard, 1996: 51)

The adoption of mediating technologies which remove the need or will to think is perceived to signify an indifference to our own human nature, characteristic of a ‘depersonalised and groundless society distracted from the realities of life’, such as poverty, injustice, racism, and ageism (Marx & Engels, 1978: 349). As we spend more time interacting with various applications than each other, there is a danger of losing our sense of a distinct self, as bonded to others by means of historically contingent spatial and temporal attachments which connect to tradition, beliefs, and

moral attitudes. Defined by particular desires (becoming more object-oriented than instinct oriented), our relationships with others and objects become centred on the fulfilment of particular needs, utility, satisfaction, and use-value (Baudrillard, 2002: 72–73). Along with the functional properties of the web, the pursuit of self-satisfaction and those objects which deliver gratification seem rather meagre aspirations of this new order. All that is left once socio-culture, historical particularity, and our communal sense of identity are obfuscated, diluted, and lost is an abstract present or perpetual now, which is more concerned with simulacra than material objects or authentic subjects.

From *homo economicus* to *homo semioticus*

In *Simulations*, Baudrillard presents all aspects of life as being part of a structural process of communication comprising a system of ‘signs’, also referred to as simulacrum, image, and model. In the first of his four stages of the sign, it is a true and opaque reflection of reality — this is the mirror phase. In the second stage, the sign masks, disfigures, and obscures those natural properties which render an object real. In the third stage, the sign conceals the absence of any reality: the sign itself pretends to be real by taking on the appearance of — resembling — reality. The final stage sees a reversal of the relationship so that the sign precedes reality; it is pure simulacrum (Baudrillard, 1983: 6). The system of signs which refers to an infinite range of signifiers has now been modified in its relation with machine-led technology, so that the human subject is subsumed into a commodified and reified system of signification. In this way, the objective world of reality has been replaced by hyperreality. So it becomes pertinent to ask what becomes of the body, the emotions, and the social. For Baudrillard, hyperreality is the end product of a historical simulation process in which the natural world and all its referents are progressively replaced by technology and self-referential signs. Consequently, there is little to support the idea of the social or legal subject *qua human* in this ‘order of simulacra’ or appearances. Ultimate meaning is found only within a closed and self-referential system of codes which constitutes both the end-point, and negation, of the law of value.

The ubiquity of the ‘code’ and the sign constitute an infinite regression of self-reference and, for Baudrillard, this typifies the same Marxian notions of alienation and reification which underscore the controlling culture of capitalist consumption. It is ultimately *we* who are consumed and thereafter endlessly reproduced as simulacra and simulation in the realm of hyperreality. He offers a three-stage process of (1) the replacement of *production*, based on the relationship between labour and capital, as the ordering principle of society, which led to mass production; then (2) *consumption*, the consumer society; and finally (3) *social reproduction* in the form of the knowledge industries and information processes for example. This is the final stage of history in which the simulacrum (the replica, mirror image, our doppelgänger) and the interplay of signs replaces production, class conflict, and other elements of the political economy. According to this paradigm, from now on all social life is organised into abstract categories as manipulated by cybernetic models. In the concluding pages of *The Consumer Society: Myths and Structures*, Baudrillard (1998)

refers to the 1930s silent German expressionist film ‘The Student of Prague’, which portrays a Faustian bargain in which the student relinquishes part of himself, his image, for money.

[A]n impoverished but ambitious student, Balduin, sells his mirror image to the Devil and thereby enters the whirl of high society. However, his image, become flesh and blood, appears to him and begins to follow him, apparently seeking revenge for having been sold. In fear he hides from public view only to discover that his double has now replaced him in society. In despair the student resolves to kill his doppelgänger and when it appears in his room and passes between him and the mirror from which it emerged, he fires a pistol at it. The mirror shatters, the phantom vanishes, but the student himself collapses to the floor, dying. In killing his image he kills himself. Yet in losing his life he finds salvation as, with his dying glance, he sees himself as himself: restored within a broken shard of the looking glass. (Pawlett, 2007: 154)

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The film dramatises a form of contemporary alienation, in which, although we may exist, there is a loss of unconscious meaning in the projected mirror image. An essential part of our nature escapes from us in this process (our essence or soul), yet we are incapable of escaping it so it is forever present in its aching absence. In other words, the transparency of our relation to the world is expressed by our unimpaired relation to the image in the mirror and symbolically this indicates reciprocity between the world and oneself. When this connection is broken or weakened, or if the image is missing, it signifies the world is becoming opaque and we have no perspective on our identity — as if we are at once estranged from ourselves. Separated by its owner, the mirror is solid and takes on a magical life of its own, yet the alienated person is not merely diminished, rather, he is ‘turned inside out, changed into something evil, into [his] own enemy, set against [himself]’ (Baudrillard, 1998: 190). According to this hypothesis, there is nothing left with which to protect us from the ‘obscurity’ and excess of the virtual as ‘we are no longer the actors of the real world, but double agents of the virtual’ (Baudrillard, 1995: 125).

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Baudrillard explains that, in the specular sense ‘there is no longer any soul, no shadow, no double’ and, therefore, ‘no longer any contradiction within being, or any problematic of being and appearance’ (1998: 191). This ‘final irreversibility’ has imploded any distinction between reality and the imaginary, being and appearance, knowledge and belief. The social, cultural, and economic realm is characterised by an assortment of fleeting and disconnected ‘floating signifiers’ which are free from any objective grounding. As Bauman states in *Postmodern Ethics*: ‘all things stand ultimately for nothing but themselves — there is no division between things that mean and things that are meant’ (2000: 36). The artificial world of simulation functions on the basis that ‘signs are exchanged against each other rather than against the real — *on condition* that they are no longer exchanged against the real’ (Baudrillard, 1993: 7). The current condition of late modernity means simulacra are no longer associated with any authentic referent; there is simply nothing behind the codes, signs, and images that circulate detached from any real material objects or emotional attachments. Recent research has examined the impact of the internet, in particular Google, on the traditional human stratagem — the transactive memory system — for sharing information or remembering events. The transference of information

between friends and families or professional specialists such as doctors, lawyers, and librarians typically took place via face-to-face interaction, while these exchanges are now more likely to be impersonal and mediated by Google. Just as the values of the Catholic Church captured the medieval consciousness, it is suggested this unquestioning reliance on, and trust of, digital information systems has blurred the line between our own human capacity for knowledge retention and that of the web: 'As we offload responsibility for many types of information to the internet, we may be replacing other potential memory partners — friends, family members and other human experts — with our ever-present connection to the seemingly omniscient digital cloud' (Wegner & Ward, 2013). This late modern era is, therefore, characterised by Baudrillard as an era of 'radical alienation' because culture, sexuality, and human relations no longer offer the possibility of transcendence, as all options are pre-coded and based on models of consumption within a system of signs under which 'the human being is currently domesticating itself by means of its technologies [...] submitting collectively to the same rituals as insects' (Baudrillard, 1994: 84). The utility and ubiquity of communicative technologies have fuelled a culture of compulsion and, in this way, that culture is privileged over what is lost by the uncritical acceptance even absorption by such totalising forms of mediation.

The ability of signs to imitate, and even disfigure, real objects and ideas has resulted in the proliferation of artificial representations of natural phenomena in our relationships, aesthetic objects, and architecture. In semiotic terminology, these signs 'play' at mirroring the real, feigning authenticity in order to mimic nature. In the UK, shiny new shopping centres depict tropical rainforests and museums recreate working coal mines while simultaneously most of the latter have closed with disastrous consequences for entire communities. Historic town centres and villages are economically marginalised by these simulated cities of consumption, while the original loci of social life have become peripheral (Shaw, 2008). A Baudrillardian view would be that, as nature and history are simulated to vanishing point, there will soon be no difference between the Industrial Revolution and its commemoration at the 2012 London Olympic Games. Baudrillard uses the paradigm of the shopping complex, or hypermarket, as the new model for social relations because of the manner in which it subverts the idea of regular living conditions and habits. Traditionally, communities have been formed around the locus of an *agora* — a political and commercial centre — from which the city has extended organically over time. The hypermarket, rather, imposes an artificial environment served by a programmed traffic infrastructure usually accompanied by new housing developments, in order to supply these deterritorialised poles of simulation with a workforce. The new centres of consumption have no past and no future; they no longer have anything to do with the idea of a city or a people (Baudrillard, 1995: 77–78). These new public spaces are non-places in that they lack the symbolic expressions of identity, history, and culture and therefore comprise empty places to which no meaning is attributed. The gap between artifice and nature is lost as 'the territory no longer precedes the map [...] it is the map that precedes the territory' (Baudrillard, 2003: 1–2). As a result of our technologies, it could be said that we inhabit a transformed space which is not even a simulacrum of the old world, rather, it constitutes a world beyond, without death — without ends and without end.

Conclusion

The contemporary information order, unlike classical states or institutions, is a society connected by an inexhaustible range of disembedded networks of human-machine mobile interfaces with the capability of meeting face-to-face often at opposite ends of the globe to exchange ideas, thoughts, and messages without the need for physical transportation. An evolving medium, it is too soon to reliably envisage the fullest consequences of information and communications technology and, although there are many obvious positive implications, it is not a neutral medium. As human thinking and decision making are increasingly dependent on a range of technologies, this makes control of a mass-produced, simulated reality an attractive proposition to a range of known and anonymous self-interested public and private profit-motivated organisations. Informational capital is already dominated by corporate interests as demonstrated by the total assets of just two of the top telecommunications corporations: AT&T and Verizon. At a combined total of US\$551.9 billion at the end of 2013, both companies have revenues larger than the GDPs of Ireland, Portugal, the Philippines, or even Nigeria (Fortune 500, 2012; World Bank, 2013). However we interpret the impact of this advanced technological age, it is organised according to a new data-gathering, surveillance-oriented, knowledge-power regime which operates at the micro level in the capillaries of society. In this current climate of endless technological transformation, along with the growth of surveillance technology together with the expansion of regulatory state powers, it is clear that any further innovations cannot be left to market forces.

It is no longer possible to understand humanity, civilisation, and social organisation without appreciating the role played by technology; however, thus far there is no formal or settled critical theory of ICT. Yet, if we are to avoid real life becoming empty representation along with an inexorable decline in human moral status, there is a pressing need to critically evaluate those structures which underpin the messages transmitted by individuals and institutions with the ability to fashion identities, shape culture, and even assemble entire realities. Just as, at a human level, rational thought processes restrain ideas which are unruly and require control, ICT advancements have proliferated to the point where these technologies also need to be classified, restrained where necessary, and diluted into the real world in real time. Due to the multi-dimensional nature of such an extensive project, nothing less than a holistic response is sufficient which connects *inter alia* biological scientists, technologists, political scientists, organisational theorists, sociologists, philosophers, and even poets and writers of science fiction. This is because only by meeting the posthuman challenge with critical creativity and forging new alliances between natural, life, human, and social sciences is it possible to begin to purposefully reimagine a sustainable future for humans alongside their nonhuman others in a cultural posthuman world.

Note

1 HL Debate, 13 May 2014, col. 1749.

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