PAYING ATTENTION: TOWARDS A CRITIQUE OF THE ATTENTION ECONOMY

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Paying Attention

How are the ways we understand subjective experience – not least cognitively – being modulated by political economic rationales? And how might artists, cultural theorists, social scientists and radical philosophers learn to respond – analytically, creatively, methodologically and politically – to the commodification of human capacities of attention? This theme issue of *Culture Machine* explores these interlinked questions as a way of building upon and opening out contemporary research concerning the economisation of cognitive capacities. Drawing on and extending work produced for a 2010 European Science Foundation-funded conference, also entitled *Paying Attention*,[1] this special issue proposes a contemporary critical re-focussing on the politics, ethics and aesthetics of the 'attention economy', a notion developed in the 1990s by scholars such as Jonathan Beller, Michael Goldhaber and Georg Franck. This notion – and the related conceptualisations such as of 'experience design', the competition for 'eyeballs', 'click-throughs' and so on – animates contemporary digital media production, advertising and the online, multitasking, near-pervasive media milieu in which they develop.

If an economy is the means and rationale through which a given society commodifies and exchanges scarce resources, then the 'attention economy', following Marazzi (2008), defines human attention as a scarce but quantifiable commodity. According to Goldhaber (1997) and subsequent critics, this is the techno-cultural milieu in which contemporary Western societies operate and in which the 'web-native' generation lives. In the industrial age the role played by the forms of media in coordinating consumption with the needs of production was identified and critiqued by prominent

members of the Frankfurt School. As Bernard Stiegler (amongst others) argues in the wake of *Kulturkritik*, in the digital era the function and impact of the 'programme industries' attains a new level of influence and penetration with profound potential to transform the enabling dynamics of social, cultural and political relations, negotiations, and identity formation. In *Taking Care of Youth and the Generations*, Stiegler (2010) announces a battle for criticality that must be fought – or, rather, re-commenced – against the mainstream adoption of digital technology's potential visible in notions like the attention economy. In response to this call, this special issue will *both* experiment with the concepts, sensibilities and methods necessary to attend to the attention economy *and* attempt to understand how substantive examples reveal the contemporary bio-political reality of the commodification of our cognitive capacities.

Understanding processes of commodification, regulation and subjectivation of and through capacities for attention requires that we explicitly conceptualise the relation between bodies, cognition, economy and culture. This is precisely the point from which the articles in this special issue launch their various critical engagements. There are accordingly contributions by Michel Bauwens, Jonathan Beller, Bernard Stiegler and Tiziana Terranova. Together, they unpack and question the notions of economy and attention and the assumptions and implications of their combination. Political economic, philosophical and critical theoretical perspectives informing critical and activist responses to the predominant global mobilisation of attention are laid out and put into dialogue in and between these texts. A series of essays from an interdisciplinary range of scholars deepens this critical interrogation. These extend and elaborate on this dialogue, focussing on particular thematic, and (inter)disciplinary issues and drawing on specific digital media case studies, including: social networking; the urban governance of communal identity; and the inattention paid to the material provision of the devices and facilities of 'immaterial labour'. This issue also offers an additional section containing discussion, position statements and provocation from more practice-oriented contributors. It is a central tenet of this issue's theoretical agenda that critical and creative responses to the forms of digital mediation of attention must be composed, in dialogue, and must also mutually inflect each other's development.

In this editorial we contextualise the interrogation of the notion of attention as it is mobilised in approaches to the attention economy.

In the next section we offer a genealogical reading of the discourse of attention and its economies as the theoretical milieu from which this issue of *Culture Machine* proceeds. We bring together what we see as some of the key conceptual and discursive waypoints via which the critique represented in this issue can be navigated. To sketch the shape of the critique presented by this issue as a whole and to introduce the substantive arguments therein, in the concluding section of this editorial we offer a thematic outline of the insightful and provocative articles that make up this issue.

Attending to Attention

There have been several articulations of the commodification of the human capacity for attention and the political economic rationales for reconstituting capitalism in the locus of the body. It would be a mistake to lionise an originator or moment of inception of this set of ideas, but one might look to a range of progenitors: from (post) Marxian such as Debord's (1992) critique of the *Society of the Spectacle* and Adorno and Horkheimer's (1997) critique of the 'Culture Industry'; Edward Bernays' (1947) psychoanalytically inspired development of public relations as a means of 'engineering' attention, as well as Foucault's (2008, 2010, 2011) discussion of biopolitics and the 'techniques of the self'. As digital technologies arrived in the popular consciousness, in the late 1990s, multiple appeals were made to a 'digital', 'information' or 'network' economy (for example: Barbrook, 1999; Castells, 1996; Tapscott, 1996) that undergird arguments concerning an attention economy. In recent literature, a number of scholars have attended to attention variously as: an intellectual crisis brought about by the internet (Carr, 2010); an issue rooted in the industrial production of moving images (Crary, 1992, 2001); as well as a pedagogical concern with regard to how young people come to know and care for their society and the world (Stiegler, 2010) but also with regard to how we collectively negotiate truth through network technologies (for example: Rheingold, 2012).

In this introduction we identify four particular, yet related, ways of thinking about how attention is commodified, quantified and trained. First, the attention economy has been theorised as the inversion of the 'information economy', in which information is plentiful and attention is the scarce resource. Second, post-Marxist critics have identified 'cognitive capitalism', the enrolment of human cognitive capacities as 'immaterial labour' *par excellence,* as the

foundation for an attention economy. Third, several continental philosophers have identified the cerebral and neural as an object or site of politics, with a neural conception of attention becoming, particularly for Stiegler, a key issue. Finally, the internet, as a mediator of contemporary intellectual and social activities, has been identified by popular commentators as a threat to our mental capacities, devaluing them, and thus posing a risk to our ability to contribute to society. They are by no means exhaustive, but it is betwixt and between these various understandings of an attention economy that the discussions within this issue are accordingly positioned.

The scarcity of attention

The abundance of information, or 'content' (that enigmatic abstraction of message from medium), ever more available to us via an increasing range of media devices, services and systems, sets our ability to attend to that information as a scarcity. In 1971 Herbert Simon articulated the issue in terms of 'information overload':

> [T]he wealth of information means a dearth of something else: a scarcity of whatever it is that information consumes. What information consumes is rather obvious: it consumes the attention of its recipients. Hence a wealth of information creates a poverty of attention. (Simon, 1971: 40)

Several evocations of an attention economy were formed at the end of the last century, including: Beller (1994), Davenport and Beck (2001), Franck (1999) and Goldhaber (1997). The latter three offer normatively positive readings of this emergence, while Beller (discussed further below) proposed the need for a recalibrated critical practice based on a Marxist cultural and political economic framework. The paradigm of the commodity adopted in the latter formulations invites the assumption that attention has no degree: that one either pays attention or does not. Thus, as the capacity for attention by a finite audience, a society, is dispersed across a broadening range of media, those media command ever decreasing 'segments' of that market. This is the premise for Michael Goldhaber's (1997) argument that 'the economy of attention – not information – is the natural economy of cyberspace':

> [O]urs is not truly an information economy. By definition, economics is the study of how a society uses its scarce resources. [...] We are drowning in information, yet constantly increasing our generation of it. [...] There is something else that moves through the Net, flowing in the opposite direction from information, namely attention. (Goldhaber, 1997)

Attention as a commodity, for Goldhaber, endures: it is not a momentary circumstance but something that has prolonged effects. Thus when attention is garnered it builds a potential for further attention in the future: 'obtaining attention is obtaining a kind of enduring wealth, a form of wealth that puts you in a preferred position to get anything this new economy offers'. The commodity of attention is accordingly a form of property. For Goldhaber, attention as 'property' leads to the rise of immaterial labour, and the lessening of the money economy in favour of some form of 'attention transaction'. This ill-defined concept and the unsubstantiated claim that 'disappearance of the involvement of capital will be equally the case for attention-getting objects of just about any sort' demonstrates the limits to the proposition of a totalising attention economy (Goldhaber, 1997). Where Goldhaber's analysis rings true is in predictions that we would increasingly place import upon online social networks and the diverse means by which they are accessed – for example: blogs, email, Facebook, instant messaging, Twitter.

An understanding of the deluge of media forms as the constitution of attention scarcity in the mainstream media sector has significant ramifications in the context of education and pedagogy. This is the central thesis of Georg Franck's (1998, 1999) articulation of an attention economy founded upon the 'socialisation of prominence' and the 'decline of material wealth'. Suppliers technically reproduce media content while the audience 'pay' through live attention to each copy:

> Only through this asymmetry is it possible to collect such masses of donated attention, which is what makes a medium attractive for those appearing in it and which allows the media their lavishness in conferring the modern peerage of prominence. (Franck, 1999)

The difference between money and attention for Franck is that in addition to an apparent exchange value attention has the corollary value of identity. Attention cannot be accumulated in the same ways as money but, Franck argues, it can be calculated through 'esteem'. This is accordingly the foundation of the attention economy within the academy (unsettlingly close to the model for the British Research Assessment Exercise). The aim of education, for Franck, is the acquisition and application of knowledge; it is a form of capitalized attention that constitutes a 'mental capitalism'. Indeed, in his 2010 conference presentation, Franck argued that this has much earlier origins; that, in fact, the enterprise of science has always been a continuing production of knowledge value. Thus the attention economy is a further development of the industrialisation of a 'knowledge society' (Franck, 2010). It is therefore nothing less than the self-consciousness we can afford that depends on an income of attention. Franck argues that the power of science can be explained as the attempt to gain cultural leadership in the formation of an industry dedicated to knowledge production. Thus, in a 'knowledge economy', the wealth of attention can be wielded as a capital.

The thesis presented by Goldhaber and Franck can be read as a restatement of the idea that a media ecosystem delivers attention to advertisers and therefore to consumption (Dovey, 2011). Thus, attention is rendered equal to time. The advertising metrics of cost-per-click-through or cost-per-thousand-viewers holds and the context or nature of the attention rendered is ignored: as long as the quantifiable metric is achieved the cost remains the same (Dovey, 2011). As Franck attempts to argue, with the increased competition for our attention and the suggested decline of the traditional mass media monopolies, the quality of attention paid becomes a concern. Like Goldhaber and Franck, Thomas Davenport and John Beck (2001) argue that there is a transition underway from time as labour to time as attention:

> Certainly something to which people allot a good deal of time in practice can receive minimal attention. […] Conversely, a huge amount of effective attention can be given to something in a small amount of time. (2001: 28)

Attention is implicitly figured in all of these accounts as a largely rational, and entirely conscious, capacity. As Davenport and Beck suggest: 'Attention is focused mental engagement on a particular item of information. Items come into our awareness, we attend to a

particular item, and then we decide whether to act' (Davenport and Beck, 2001: 20). An attention economy is therefore not considered problematic because the strong causal link implied, the rational choice of the economic subject, maintains a semblance of freedom. However, once that causality is problematised a range of issues opens up concerning the commodification of cognition as such.

Cognitive Capitalism

The critiques offered of the account of *Homo economicus* as rational and self-interested and the broader destabilisation, if not dispersal, of the stable human subject present an alternative account of the attention economy. Attention is embodied as a cognitive capacity, expressed not only consciously but also sub-consciously in the various ways in which we comprehend and interact with the world. Leftist, largely Marxian or post-Marxist, criticism of the apparent co-opting of capacities for attention by the systems of capitalism have variously addressed the industrialisation of attention capture, the extension of state apparatuses of control towards cognition, and a reaffirmed targeting of the 'general intellect' by capitalism. We focus on two particular positions adopted here, that of Jonathan, in relation to the industrial processes of attention capture through screen media, and that of the 'post-Fordist' movement, which includes the work of Franco Berardi, Antonio Negri, Paolo Virno, and in particular Christian Marazzi, concerning the transformation of labour into immaterial labour and the destruction of income.

Language lies at the heart of the post-Fordist transformation of labour into what Marazzi (2008) calls the 'New Economy'. Marazzi's thesis is that the distinction between the 'real economy, in which material goods are produced and sold, and the financial economy, where the speculative dimension dominates investor decisions' must be reconceived in terms of language as a primary creative force (Marazzi, 2008: 14). With the diminution of the value of the labour force tied to the growth of the speculative financial markets, and the pensions and savings of the workforce also tied to those markets, the masses are enjoined to identify their personal fortunes (in the fullest meaning of that word) with the success of the financial markets:

> With their savings invested in securities, workers
> are no longer separated from capital [...] they are
> tied to the ups and downs of the markets and so

they are co-interested in the 'good operation' of capital in general. (Marazzi, 2008: 37)

These alliances of speculative capacities and the workforce, combined with the promotion of the abstract value of brands divorced from products and the growth of immaterial labour, identify language 'not only as a vehicle for transmitting data and information, but also as a *creative force*' (Marazzi, 2008: 27, original emphasis). As machines increasingly perform manual labour, the post-Fordists argue that digital technologies 'change the relationship between the intellectual content of work and its material execution' (Berardi, 2001: 51; cited in Marazzi, 2008: 40). There is accordingly a devaluation of labour time through the apparently limitless expansion of available information, but that 'limitless growth in the supply of information conflicts with a limited human demand' (Marazzi, 2008: 64). The 'New Economy' thus has at its heart an attention economy. Marazzi argues that this sets in train a move in the economy to consume not only work time but also 'non-productive', or leisure, time.

The decrease of leisure time within the attention economy also produces a crisis of income because 'rather than increasing, [income] seems instead to diminish […] in relation to the increase in the quantity of time dedicated to work' (Marazzi, 2008: 68). The corollary is that if 'attention time increases then the time dedicated to earning a salary inevitably decreases' (68). Thus the crisis in the 'New Economy' is its excess:

> an economy innervated by communication technology needs consumers who have a large amount of *attention* time [and given that] the New Economy… consumes not only work time but also nonwork time or living time… it follows that the crisis of the [attention economy] is determined by the contradiction between economic time and living time. (Marazzi, 2008: 146; original emphasis)

The crisis of this 'excess economy' lies in the disproportionate relation between an ever increasing, and devaluing, sphere of information and a diminution of attention time. In a call that resonates with the suggestions made in-interview by Michel Bauwens in this issue, Marazzi suggests that resistance can be offered through the formulation of a 'biopolitics from below',

ground-up movements to 'take care of the multitude; that enables it to live for itself' (Marazzi, 2008: 157).

In a 1994 article on cinema as 'capital of the 20th century' and in his 2006 book *The Cinematic Mode of Production*, Jonathan Beller offers an 'attention theory of value', developed over the course of several years, as a 'hypothesis of the production of human attention… derived from the way in which capital process occupies human time in the cinema and other media' (Beller, 1994: §11). This attention theory of value diagnoses, via a Marxian understanding of labour, the 'prototype of the newest source of value production under capitalism today', namely 'value-producing human attention' (Beller, 2006a: 4). Cinema is the central technical fulcrum around which this hypothesis turns: it is cinema that 'brought the industrial revolution to the eye' (Beller, 2006b): 'spectators' practice of connecting a montage of images moving in front of them was not just analogous but homologous to workers in a factory assembly line producing a commodity' (Beller, 2006b).

In 'Paying Attention', an essay published in the same year as his book and bearing the same title as its Epilogue, Beller argues that 'the media have not just been organizing human attention; they *are* the practical organization of attention… Attention is channeled in media pathways that traverse both hardware and wetware' (2006b). Thus for Beller, as for the Post-Fordists, the attention economy not only acts in terms of apparently rational practices but also through cognition itself, the 'wetware' of the brain, as a form of not only mental capitalism but also cognitive capitalism.

Beller arrives at a similar political economic concern for cognitive-linguistic capacities to Marazzi. However, his polemic calls forth a dystopian vision of a near total biopolitical subsumption of those capacities, understood as Marx's conceptualisation of 'general intellect', in capitalist production: 'We speak, act, think, behave, and micro-manage ourselves and others according to the "score" that is the general intellect – in short, the protocols or grammar of capital' (Beller, 2006b). The subsuming of the general intellect into the protocols of capital is thus the subsumption of humanity. As Patricia Clough suggests of Beller's argument: 'labour itself becomes "a subset of attention, one of the many kinds of possible attention potentially productive of value"' (Clough, 2003: 361 citing Beller, 1998: 91). The system of production that calls forth this totalising attention economy is the industrialisation of image production that Beller names 'cinematization' (Beller, 2006b). Enframed by our

screens, and repressed in that framing, Beller suggests we are on the brink of a nightmarish society of the spectacle: 'in the world of paying attention, humanity has become its own ghost' (2006b). However, it is, for some, perhaps not enough to speak in general terms about cognition. For if the embodied nature of this form of cognitive capitalism is to be understood as founded in the marshalling of the neural and synaptic capacities of the brain, as Beller (2006b) alludes with his use of the pseudo-technical term 'wetware', then it follows that we must attend to the brain as a site of enquiry.

Taking care of brain and spirit

In the last decade there has been something of a 'neurological' turn in the humanities (Lovink, 2010; Munster, 2011), in which theorists have looked to neuroscience to find the specific somatic basis for the inter-relation of mind and body and associated concepts such as affect. General engagements with neuroscience, popularised by neuroscientists such as Antonio Damasio (2010) and Marc Jeannerod (2002), have gained popular traction and have been adopted by a range of scholars in the humanities and social sciences, such as Connolly (2002), Malabou (2008) and Rose (2006). There have also been adoptions of specific neurological research findings both as impetus and justification for arguments (for example: Carr, 2010; Hayles, 2007; Stiegler, 2010). Three inter-related positions are of particular relevance to the work collected in this journal: that of Katherine Hayles (2007), whose work in turn is used by Bernard Stiegler (2010 and this issue), and that of Catherine Malabou (2008).

In a relatively short essay of 2007 Hayles offered a hypothesis of a 'generational shift in cognitive styles' between 'deep' attention and 'hyper' attention (2007: 187). The cognitive style of 'hyper attention', Hayles suggests, evolved first as a means of dealing with 'rapidly changing environments in which multiple foci compete for attention' (2007: 188), whereas 'deep attention' emerged later, largely from pedagogical and scholarly sensibilities, 'for solving complex problems represented in a single medium' (188). To develop her hypothesis Hayles draws upon policy-oriented discourses of the pathologies of attention deficit and hyperactivity disorder and the study of media technologies (see: Kaiser Family Foundation, 2005), backed up by broad readings of neuroscience (Bear, Connors, & Paradiso, 2007). Hayles argues that this shift in

cognitive styles is a pedagogical issue, for it challenges established models of teaching and learning. Digital media are both part of the problem and part of the solution for Hayles, for

> [d]igital media offer important resources in facing the challenge, both in the ways they allow classroom space to be reconfigured and the opportunities they offer for building bridges between deep and hyper attention. (Hayles, 2007: 195)

Taking this argument as one of many impetuses, in a wide-ranging argument about attention as a form of care (following Foucault, 2008), both for the self and for society, Bernard Stiegler adapts Hayles' categories of 'deep' and 'hyper' attention to identify a particular risk to contemporary society. In *Taking Care of Youth and the Generations* Stiegler (2010) announces a struggle for criticality that must be re-commenced against the mainstream adoption of digital technology's potential visible in notions such as the attention economy. This line of argument has as its basis a system of thought that Stiegler has formulated through which we can understand the human as a technical being or rather, becoming (see: Stiegler, 1998, 2009, 2010). Attention, understood in this ontology, is not an individual but rather a psychic and social capacity that is historically, and thus technically, conditioned: 'The formation of attention is always already simultaneously a psychic and social faculty' (Stiegler, 2010: 18).

Drawing on and revising Edmund Husserl's analysis of internal time consciousness, for Stiegler attention accordingly consists of an interplay between the interior (psychic) and technical accumulation of 'retentions', which are the conscious acts of processing the passage of time (see Stiegler, 2010: 17-19). This technical accumulation is the exteriorisation of memory as 'tertiary' retentions, whereas primary and secondary retentions are interior to the formation of the subject. The fixity of particular ways of knowing, as tertiary retention, is understood by Stiegler, following Derrida (1997) and the linguist Sylvian Auroux, as *grammatisation*: the processes of describing and formalizing human behaviour into representations such as symbols, pictures, words and code, so that it can be reproduced. As Crogan has previously explained, 'grammars' are constructed in this way through which technocultural programmes can be instantiated: 'These are actions, habits, rituals, practices that amount to sets and sequences of *grammes* […]

conditioned and channelled by the ensemble of grammars which comprise the cultural pro-gram' (Crogan, 2010: 96 citing Stiegler, 2009: 72-73; additional emphasis). Grammatisation processes are, according to Stiegler, a form of *pharmakon*. Drawing on Derrida's deconstructive reading of the *Phaedrus* in 'Plato's Pharmacy'), Stiegler glosses *pharmakon* as both a poison and a cure – a form of recipe, substance or spell (Derrida, 1981). In *Phaedrus*, Plato uses the concept of the pharmakon as a play of oppositions: poison/remedy, bad/good, to characterise the ambivalent nature of writing as a technique of memorisation.

What might be understood as the biopolitical apparatus of the emerging attention economy outlined by Beller and Marazzi – albeit from a Marxian perspective – is performed through an interiorisation of the attention commodification logic. To understand this interiorisation we must, in Stiegler's view, understand its basis in the pharmakon of grammatisation. This is not only a formulation of biopower, operating at the level of the body, but also of *psycho*power, operating within mentality and upon the brain. This form of power consists in the tendency towards the displacement of 'attentional' techniques, which produce 'deep' attention, by industrially mass-produced 'attentional technologies' that are designed to generate one particular kind of attention – to consumption:

> the appearance of so-called new media leads directly to the hypersocialisation of attention through the increasing collaboration among the programming industries to capture audiences, to the detriment of deep attention … very probably correlating with attention deficit disorder and infantile hyperactivity. (Stiegler, 2010: 94)

Not only does this operate socially but, Stiegler argues, attentional technologies also affect the neural functions of the brain by interfering with the 'plastic' function of synapses. However, because of its plasticity the brain remains open to influence. Equally, as Stiegler argues in this issue, the 'pharmacological' character of psychotechnologies leaves open the capacity for a less poisonous mobilisation of the recognised potential of digital audiovisual culture to re-form the economy and society.

In an argument cognate to Stiegler's (2010) work, provocatively entitled *What Should We Do with Our Brain?*, Catherine Malabou (2008) engages with contemporary neuroscience literature to revisit the question of the subject, or 'the self', in light of the proposition of neuroplasticity. Malabou builds on recent neuroscientific developments concerning understandings of (neuro)plasticity with her own thinking of plasticity through the philosophy of Hegel. As the title of her work illustrates, Malabou is interested in the philosophical import of the neuroscience of plasticity. For Malabou, plasticity provokes ethical and political questions and demands that we attend to our neural and cognitive nature(s) in relation to how we act. She argues that to consider 'an ongoing reworking of neuronal morphology' (Malabou, 2008: 25) forces us to think beyond the notion of a 'hard wired' evolutionary tendency, beyond a biological or genetic determinism:

> It is precisely because [...] the brain is not already made that we must ask what we should do with it, what we should do with the plasticity that makes us, precisely in the sense of a work, sculpture, modelling, architecture. (Malabou, 2008: 7)

What is at stake for Malabou (2008) then, as Ian James (2012) suggests, is '*both* the plasticity of neuronal self *and* that of collective social and political organisation' (James, 2012: 100). While she does not directly address attention, Malabou's argument clearly has such capacities at its heart.

Even though Malabou utilises the empirical findings of the 'hard' sciences, she is at pains to outline how the accounts of neuroscientists such as Damasio and Le Doux resort to culturally specific notions such as an auto-poetic function in describing how consciousness develops by telling itself stories about its own 'begetting' (see Malabou, 2008: 58-62). Consequently, it is important to realise that hard science does not simply provide an essential epistemological truth about the neuroscientific basis for our faculties of attention. On the contrary, Malabou argues it is all the more important to critically evaluate the ideological basis for scientific and technocultural knowledge production as the neurological turn heads in the direction of a cultural and historical conception of consciousness. Equally, Isabelle Stengers has forcefully argued that scientific 'truth' emerges through a shifting dialogue between human and non-human assemblages. Again, scientific knowledge for Stengers (1997, 2005) does not have a

special form of access to things in themselves. Nature 'cannot be dominated by a theoretical gaze, but must be explored, with an open world to which we belong, in whose construction we participate' (Stengers, 1997: 37). We cannot accordingly exempt our own 'nature', studied by science, from these caveats. In a complementary way, Malabou notes that human nature 'contradicts itself and… thought is the fruit of this contradiction' (2008: 82). Accordingly, we can see that it remains important to maintain a healthy scepticism about any forceful or unproblematic affirmations of a settled neuroscientific basis for the study of attention.

Online intelligence

A number of popular commentators have offered arguments concerning the effects and potential of the internet that range from feeling anxious about a perceived diminishing of attention caused by life online, to proposing an emerging capacity for creativity and collaboration engendered by network technologies. Amongst the anxious are Nicholas Carr, who expresses a technological determinist fear of the human subject being rewired by network media, and Jaron Lanier, who suggests the 'hive mind' of participatory media has blunted intelligence through a form of 'digital Maoism'. Amongst those seeking to promote or rehabilitate media technologies as a positive supplement to the human are Howard Rheingold, who suggests the negative effects of the internet are outweighed by the positive if we are mindful in our usage, and Clay Shirky, who argues that digital technologies have produced an increase in leisure time that creates an untapped cognitive potential he calls a 'cognitive surplus'.

Perhaps the most apprehensive, and widely-read, argument is Nicholas Carr's (2010) *The Shallows,* in which he argues that the internet as a mediator of much of contemporary communication engenders particular forms of interaction that are having detrimental effects on our mental capacities. In Carr's thesis, the brain is thus rewired by the internet so that users of digital media are rendered more efficient automatons for repetitive tasks that require little attention, but at the expense of 'higher' cognitive faculties:

> calm, focused, undistracted, the linear mind is being pushed aside by a new kind of mind that wants and needs to take in and dole out

> information in short, disjointed, overlapping
> bursts – the faster the better. (Carr, 2010: 10)

The substantive elements of the argument, as with Hayles' 'deep' versus 'hyper' attention, are supported by references to work in neuroscience.Here again we are faced with the political implications of adopting scientific research without reservation, perhaps making greater claims of importance than are warranted. Indeed, articles within this issue – in particular, the contributions by Bucher and Terranova – raise concerns about Carr's mobilisation of neuroscience.

The apparent 'efficiency' afforded by the advances of digital media within the world of work has been characterised by Shirky as productive of a latent potential he calls a 'cognitive surplus' (2010). According to Shirky's thesis, we (and the American public in particular) have, for some time, been encouraged to squander our time and intellect as 'passive' consumers. This has produced an excess of intellect, energy and time, what Marxists might identify as leisure time, which could be put to productive use. Just as Marazzi (2008) argues, Shirky, albeit from a very different standpoint, suggests that latent leisure time can be put to 'good' use in the production of value. His oft-cited example is that of Wikipedia, which has been largely created with only one percent of the 'latent' time and energy of the American populus. Such an argument is of course open to Marxist critiques of the appropriation of leisure time for production, such as Julian Küklich's (2005) articulation of 'playbour' and Terranova's (2000) critique of 'free labour'. The corollary to this excess, for Marazzi (2008), is that the increase in information leads to a greater scarcity of attention. Shirky (2010) sees no such diminution of the consumptive capacity; rather, he suggests there is only a rise in 'creativity'. Following Maurizio Lazzarato's (1996) treatment of 'immaterial labour', we might understand Shirky's proposition as forms of life becoming the source of innovation. We would thus arrive at the propagation of neoliberal biopower in the commodification of life itself, a similar outcome to the concerns of Nikolas Rose (2006).

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Through this introduction to the various ways in which attention has been conceptualised and problematised, it should have become clear that while there certainly is a broad interest in the capacity for attention and its uses, there is by no means a consensus of opinion.

The various tropes of attention as commodity, cognitive affordance or form of labour offer a fertile ground for further analysis and discussion, which is precisely the purpose of this issue. Thus in the final part of this editorial we present a brief discussion of the papers we have brought together that collectively offer a critique of an 'attention economy'.

In this issue

This issue sets itself two interrelated tasks in response to the scope and implications of these interrelated positions concerning attention, consciousness, culture, economics and politics. Firstly, it interrogates the notion of attention as it is elaborated in approaches to the attention economy and to media as forms of attention capture. The essays by three leading contributors to thinking in and around these themes, Bernard Stiegler, Tiziana Terranova, and Jonathan Beller, have such an interrogation as their principal task. They develop different, overlapping and sometimes contrasting perspectives on how a critical reposing of the question of attention might reframe its purchase on the central themes of the relation between interiority and exteriority, minds and media, economics and culture. The interview with Michel Bauwens, and the essays by Ben Roberts and Sy Taffel, are also working toward this end in that they identify various limitations and exclusions of the predominant articulation of the attention economy and move toward alternative, more productive, ethical or socially just formulations.

The second task of this issue is pursued in the essays of Tania Bucher, Martin Thayne, Rolien Hoyng and the three contributions to the additional section of the issue. These three – from Ruth Catlow, Constance Fleuriot and Bjarke Liboriussen – represent less scholarly but no less acute strategic inquiries into the thinking and re-making of what Stiegler calls attentional technics. Together, these contributions address particular instantiations of media forms, design practices and phenomena – from Facebook and Second Life to pervasive media design and Istanbul's digitally mediated City of European Culture project – as a way of exploring and critically inflecting the implementation of the attention economy. This second mode moves from material phenomena to theoretical analysis and critique, while the first goes the other way. As we have argued, however, the necessity of the traffic between them is a central tenet of how we endeavour to pay attention to contemporary digital technoculture in this issue.

Stiegler's essay, 'Relational Ecology and the Digital Pharmakon', is placed first to indicate the formative role of Stiegler's philosophy of technology in the germination of the critical discussion on what it means to 'pay attention'. From its beginning, his project was dedicated to the 'urgent' task (as he noted in the preface to *Technics and Time 1: The Fault of Epimetheus*, 1998) of developing a new critique of contemporary technoculture, capable of making a difference at this specific epoch of what could be called the 'digital transition'. This critique, which has been progressively elaborated in a number of books and book series, proceeds from a rigorous philosophical redefinition of the human as always composed with its technical milieu. As discussed above, human being is 'essentially' inessential, a contingent, metastable (at best) mix of this artefactual exteriority, one which possesses its own dynamic composed with that of the human (for now at least). With an interiority that imagines and anticipates itself and its future on the basis of the memories available to it from out of the past – thanks to what Foucault called 'the archive' and Heidegger 'facticity' – the human makes exterior forms that mediate this experience and inflect its becoming other. 'The media' have become, consequently, a central focus of Stiegler's critique of contemporary technoculture and, in particular, of the monopolisation by commercial interests of the forms and channels through which interior experience becomes the (material) stuff of the collective cultural dynamic.

In the essay presented here, Stiegler argues for the importance of approaching attention – that activity of consciousness (interiority) before the exterior world – from this perspective in order to comprehend the stakes of expansion of the attention economy. Drawing on Gilbert Simondon, D. W. Winnicott and others, he argues that attention must be thought of as an intrinsically social as well as individual psychic act. Attention is not a passive or automatic perceptual process, but one that is trained, learnt, and culturally and historically – and therefore, technically – conditioned. Stiegler reviews Western philosophy and cultural and social history to identify the central part played by the grammatising technics of graphical, writing and more recently audiovisual media in conditioning the 'attentional forms' through which the West became the global, globalising power that today confronts us with a range of crises signalling our possible 'end'. If, today, 'attentional' techniques and technics tend to be replaced by industrially mass produced 'attentional technologies' that are designed to generate one particular kind of attention – to consumption – this is by no means a *fait accompli*. Stiegler insists on the pharmacological character of the

technical provision of our contemporary 'relational ecology'. This is precisely the point and the possibility of paying attention to attention: to reanimate the potential for a less poisonous adoption of the widely recognised potential of digital audiovisual culture in order to re-form (that is, re-mediate) culture, sociality, economy and ecology today.

Tiziana Terranova offers a more specific critique of the contradictory assumptions subtending the notion of the attention economy before developing an alternative account of the 'social brain'. Her argument is not dissimilar in intent to Stiegler's turn toward a Simondonian reposing of attention as the mediated relation between individual and collective. Her 'Attention, Economy and the Brain' identifies the economic logic operative in the 'discovery' of the attention economy by Goldhaber and others as the solution to the problem of informational abundance in the mass mediated (and then digitally saturated) technoculture of late modernity. Attention becomes the new scarce resource which the economic must manage, utilise, exchange, distribute and speculate upon. Terranova interrogates the dovetailing of this economic revaluation of the mental activity of producers and consumers with a biopolitical (Jonathan Crary, after Foucault) and neurological (Catherine Malabou, N. Katherine Hayles) redefinition and institutional reforming of labour, leisure, education and cultural production in general. In the second part of the essay, she evokes the necessity of thinking the 'social brain' by drawing on Stiegler and Lazzarato's recent mobilisation of nineteenth-century French sociologist Gabriel Tarde's critique of the social and cultural damage wrought by industrialisation's deskilling of the labour force and the separation of work from the continuity of social and cultural life. Tarde's proposition concerning the brain's 'labour of attention' is developed as a means of thinking the always social, outward, communicative dimension of the brain's activity, its constant, iterative incorporation of the exterior in its working out of existence. The social nature of this attentional labour realises value. The drive which animates the proponents of attention economics, namely, to capture, quantify, predict and monetise the attention paid by individual brains, fails to comprehend this disjunction between the economic calculation of the value of attention and the role of attention in the very production of the values of the culture upon which the economy feeds.

In 'Wagers Within the Image: Rise of Visuality, Transformation of Labour, Aesthetic Regimes', Jonathan Beller continues and extends

his mobilisation of the Marxist traditions of political economic and *Kulturkritik* in a polemical account of the contemporary tendency of global capitalist technoculture. Building on his critical account of attention economy rhetoric in *The Cinematic Mode of Production* (2006) and earlier work discussed above, Beller develops a materialist critique of cognitive capitalism and its economy built on visuality, spectacle and the mobilisation of the 'sensuous labour' of the worker-consumer. If the Soviet avant-garde filmmakers such as Eisenstein and Vertov had theorised and experimented with the potential of cinema to engineer a new 'soul' for the modern worker-citizen, industrial capitalism had already begun the development of the proto-consumer supporting the ongoing expansion of capitalism outward geographically as well as across all aspects of lived experience through its industrial production of routine experience, spectacle and leisure time. This development becomes fully manifest in the contemporary passage toward a fully globalised, digital mediated realtime, which Beller is at pains to argue is strictly correlative to the unprecedented impoverishment and oppression of the majority of the world's population and the exhaustion of its natural resources. Insisting on the complicity of all mediated cultural production in this destructive dynamic – including scholarship in the age of the 'digital humanities' where cultural capital accumulation threatens the value and viability of critical thought – Beller explores the possibilities for responding to or resisting the pervasive 'reconfiguration of subjectivity' as capitalist commodity. His conclusion is that critical theory might do well to pay attention to how those excluded (in deed and in thought) from the immaterial virtual citizenry of the digital future try to make something of and with the digital media designed not for their benefit. Attention to what Beller calls an 'aesthetics of survival' being developed at the limit of what can be represented today might re-open speculation on questions of the just, the common, and the care of all beings, older questions needing to be remembered and re-posed in light of the virtualising logistics of globalisation.

In his interview with Sam Kinsley, Michel Bauwens, co-founder of the P2P Foundation, argues that peer-to-peer production represents a pathway toward the all-too-evidently necessary reinvention of the industrial capitalist economic model. Peer-to-peer is already a legitimate description of how the 'knowledge workers' of cognitive capitalism work, even if their labour takes place in proprietary enterprises and is consequently alienated from them in its product's entry into marketing, distribution and intellectual property regimes. In Bauwens' words, 'the commons creates value and the market

captures that value'. He considers historical precedents for the increasingly apparent tension between the collective and cultural values of peer-to-peer and the capitalist economic system, in, for example, the transition from the late Roman empire to the feudal system, and from the feudal to the early capitalist one. He approaches the contemporary 'crisis' moment from a hopeful perspective, looking at these past moments as instances of a kind of becoming-out-of-phase of the sociocultural with the economic-legal regimes which presaged an overturning of the status quo. Bauwens surveys different positions within the peer-to-peer movement – such as that of Yochai Benkler, the Oekonux group and Dmytri Kleiner – concerning the means and logic of a 'prefigurative politics' promoting or provoking this overturning. Responding to a question about how the attention economy notion figures in this account of the possible passage to a P2P economy and culture, Bauwens states that while there is enormous investment in the commodification of attention (along with everything else capable of being thought of as 'valuable' today), there is no reason to think that 'capitalism has won' because of the success of a platform such as Facebook. Related to his thought of how today we live across or between two phases of cultural and economic (re)production (and echoing here Stiegler's pharmacological approach), Bauwens argues that we are both 'de-commodifying and commodifying today', and that there is both potential and danger in this situation. The Occupy movement represents for Bauwens a genuinely novel form of mass political action (along with the Pirate Party and the Indignados movements), one that operates in the disjunction between the mainstream media and the networking, peer-to-peer potential of digital network media. These movements more or less consciously adopt an open source, peer-to-peer approach to political intervention, and represent a prefiguration of the 'new society'.

In 'Escaping Attention: Digital Media Hardware, Materiality and Ecological Cost' Sy Taffel argues that the rhetoric of the 'immaterial' character of the digital technologies of the attention economy elide very material concerns. Like Beller's insistence on paying attention to the majority of the global population routinely forgotten in discussions of contemporary global technoculture, Taffel makes explicit the social and ecological implications of the materiality of digital technological production from resourcing, manufacture and energy use, to distribution and consumption, through to disposal and recycling. Drawing on an ecological conception of media and materiality developed through Gregory Bateson's critical revision of the cybernetic tradition and Felix Guattari's ecophilosophy, and

combining the Marxist materialist analysis of industrial production with a sense of the global expansion of alienation in the era of what Stiegler calls hyper-consumption, Taffel explores several case studies which highlight the problematic forgetting of materiality in contemporary debates about technoculture. These include the exploitative sourcing of rare earth materials (typified by the notorious trade in 'Coltan' tantalum from the war-torn region of the Democratic Republic of the Congo), the exploitative just-in-time manufacturing processes of the latest consumer electronics in various parts of the world (with Apple's Chinese contractor, Foxconn, a recent high profile case), and the exploitative e-waste and recycling practices that have evolved with little effective regulation or oversight. These serve to remove from view the terrible wastage of consumer gadgets by those who can afford them and extract what industry is prepared to salvage from them on condition that the costs are kept as low as possible. The ecological and human costs (in health and social well-being) are borne by the distant populations dependent on the revenues from the highly dangerous labour of dismantling these gadgets. Taffel makes us consider the consequences of these material entailments of the virtual, realtime digital technosphere and offers a way of bringing these two aspects of global technoculture into a critically conceivable and ethically more productive relation.

Ben Roberts examines the free, libre and open source software movement (FLOSS) as his contribution to the reevaluation of attention economy in this issue. 'Attention-seeking: Technics, Publics and Software Individuation' resonates with the essays by Stiegler and Terranova in identifying the limitations of Goldhaber's economic valuation of attention along the lines of Marx's account of exchange value as the reductive translation and insertion into a narrow capitalist economic order of something phenomenally and socially more complex. Roberts then examines some influential formulations of open source and collaborative software production that promote alternative models of attentional forms and their development. Christopher Kelty's *Two Bits: The Cultural Significance of Free Software* (2008) receives the most attention for the way it insists on the collective dimension of open software, a move which responds to the more individualistic (and politically naïve) celebration of autonomous 'creative labour' in Yochai Benkler's *The Wealth of Networks* (2006). Kelty's notion of software production as a 'recursive' contribution to the open source community's shared discursive becoming is scrutinised by Roberts. Its ambivalent indebtedness to a Habermasian notion of the public

sphere is identified as its problematic basis – the problem being that software production tends to be treated as a lingua franca for an ideal and ideally unified single internet public. This is where Roberts turns to Gilbert Simondon's philosophy of technology to point the way toward an account of FLOSS' potential to critically and creatively shape the formation of digital attentional forms. This account would need to understand software development as a process of individuation between individuals and their collectives, one always composed with the dynamic of technical individuation in which software developers are themselves part of the individuation of software 'individuals'. Software production would be in this account both less and more than a recursive contribution to a public debate about the future of 'the' internet, and its potential to reform the milieu of attentional technics could be better assessed from this perspective.

Taina Bucher, in her article 'A Technicity of Attention: How Software "Makes Sense"' offers a sceptical response to the neurological turn in the humanities Bucher mobilises an understanding of 'technicity' to critically examine the internalisation of control as 'governmentality' (pace Foucault) that underpins the specific human-machine assemblages of attention harnessing located in Facebook. Through a detailed reading of the specific affordances of some core protocols of Facebook, in code and the practices they engender, Bucher examines the techno-social structure of the attention apparatuses of Facebook. These algorithms operate within a form of technicity, which Bucher takes to be a 'coconstitutive milieu of relations between the human and their technical supports' (Crogan and Kennedy, 2009: 109). OpenSocial, OpenGraph and GraphRank are examined as particular articulations of power, realised in relation between code and subject, as the algorithms automate the 'sense making' processes of what content is 'relevant' to a particular user. Bucher thus identifies this marshalling of what is visible, and also invisible, in Facebook as a locus of attention as a form of 'governmentality', which she takes to be the rationalities underlying the techniques for directing human behavior (Foucault, 2008). For Bucher, then, attention is managed by Facebook to propagate a certain social order of continued participation.

In 'Friends Like Mine: The Production of Socialised Subjectivity in the Attention Economy', Martin Thayne approaches Facebook through the lens of political economy. He interrogates the emerging interrelationship between capital, labour, subjectivity and affect

which has become increasingly synonymous with a number of online social networking technologies and practices. In this regard, Thayne analyses the 'Like' button as a designed, socio-technological interaction which captures the emotive connections and engagements produced amongst the multitude of Facebook users. The extraordinary, speculative, financial value of such sites are 'based' on how such elements serve its advertising architecture, which utilises the information contributed by users (including 'liked' pages) to deliver more relevant and targeted marketing. Through an exploration of the collaborative and socialised modes of subjectivity which emerge from the use of the 'Like' button and similar tools, Thayne suggests that proprietary online social networks are central to the commercial subsumption of forms of life itself. This account draws on work which aligns the biopolitical production of knowledge, desire, attention and sociality with modes of immaterial labour. Presented here, then, is a critique of those mechanisms of bio- and what Stiegler would call psycho-power which permeate Facebook. This critique examines how specific functions, protocols and applications may embody the productive power of SNS technology in the context of configuring attention and controlling social interactions.

Rolien Hoyng in 'Popping Up and Fading Out: Participatory Networks and Istanbul's Creative City Project' analyses the networks constructed as both a part and result of Istanbul European Capital of Culture 2010. Considered as an assemblage, Hoyng argues that Istanbul as a Capital of Culture functioned both as an attention directing apparatus, with the compulsion of 'interactivity' as participation, and also as a focal point for resistance. Hoyng's essay focuses on socio-technical forms of governance that targeted Istanbul's transformation into a 'creative city' and, in particular, on discourses and practices of 'networking'. For Hoyng, the apparatuses of networking are what Stiegler calls 'psychotechnologies' that both condition and delimit our knowledge, know-how (*savoir-faire*) and our capabilities to care, including 'taking care' of ourselves and our city (here, Istanbul). Drawing on extensive empirical evidence derived from fieldwork, Hoyng critically examines the specific practices of networking that stitched together the groups from which power over the 'creative city' process was exercised and also provided a means for resistance. New relations of care among urban populations capable of defying regimes of psychopower are unlikely to emerge, according to her, from displays of otherness through information systems. For Hoyng, these kinds of relation require the

cultivation of a multiplicity of attentional forms that mediate care, memory, and dialogue and that accommodate different sets of skills.

In the additional section of this issue, artist and arts activist Ruth Catlow, architectural design researcher Bjarke Liboriussen and Pervasive Media researcher and educator Constance Fleuriot consider significant attentional forms and practices in the recent and emerging digital media milieu. Liboriussen's 'poster' considers the lessons to be learnt from the Second Life 'bubble's' intertwined utopianisms of its now exhausted virtual property speculation and its promotion of a virtual architectural design experience. The wider implications of the technicity of 'virtual worlds' are explored in this thoughtful contribution. Ruth Catlow of Furtherfield online art community discusses *We Won't Fly for Art* (2009), a collaborative media art project she undertook with co-founder Mark Garrett to encourage participants in the international contemporary art community to pay attention to the ecological implications of their default acceptance of the regime of jetsetting around the international exhibition circuit. The project encouraged 26 people to sign up and participate in a collaborative reflection on the complicity of international art with global capitalism, something that is shared by the Furtherfield's 'Media Art Ecologies' programme – of which this work was part. In 'Avoiding Vapour Trails in the Virtual Cloud', Constance Fleuriot gives an account of research workshops she conducted at the Digital Cultures Research Centre with pervasive media designers in order to develop both a language and an ethical perspective – an ethically inflected design language – on pervasive media development practice. Pervasive media is rapidly moving from the experimental to the commercial development stage and soon will be a major form of attentional technics. Using Stiegler's call for a reinvestment in Kant's notion of enlightenment as the entry into 'majority' of all, Fleuriot characterises the workshops she conducted as dedicated to developing a wider critical and ethical engagement of the designers in what they are doing (Stiegler, 2010).

Notes

[1] The European Science Foundation conference, 'Paying Attention: Digital Media Cultures and Intergenerational Responsibility' (www.payingattention.org), was convened by Professor Jonathan Dovey and the authors, Digital Cultures Research Centre, University of the West of England, Bristol, in September 2010 to

gather the input and insights of creative practitioners exploring critical and alternative uses of new media forms and technologies.

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