EDITORIAL

The Internet and the Material Turn

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The notion that the internet is an immaterial 'cyberspace', a virtual world, separate from the material world, was pervasive in the early social science scholarship on this technology (Miller and Slater, 2000: 4–5, see also Casemajor and Taffel in this issue), and such dualistic thinking still persists today. This special issue invites the reader to think differently about the internet: it draws its inspiration from the material turn, which repudiates such dualisms in favour of a monism that does not separate nature and culture, matter and ideas (see for example Van der Tuin and Dolphijn, 2010).

This issue's genesis however did not start with such metaphysical considerations, but rather from a personal encounter in the field. I was conducting an ethnographic investigation into online video makers, beginning in 2010, where I was trying to understand how and why they adopted specific internet technologies to distribute their videos.[1] My initial entry into the ethnographic field was framed by the literature on online video available at the time, which focused largely on the social ties that emerged between video makers and their audiences. While many of the video makers I researched were indeed engaged in such social interactions online, my interviews and observations also revealed that most of them were having a great deal of difficulty getting the different technologies to work the way they wanted them to. I initially dismissed these difficulties as background 'noise', however as time went on I began to realise that frustration with a failed software upgrade, concerns about disruptions caused by a denial of service attack, complaints about takedown notices generated by bots on YouTube, and criticisms of Facebook's algorithm for filtering posts were important clues to understanding the nature of the processes my informants were engaging in as they distributed their videos online. In my search for theoretical tools with which to re-enter the ethnographic field and make sense of this problematic entanglement of humans and machines, I came across the literature on new materialism. While I finally settled upon an assemblage theory approach, which drew upon both Actor-Network Theory and Manuel DeLanda's reading of Deleuze and Guattari, I wondered about the theoretical roads not taken: what insights might other new materialist theories bring to our understanding of internet technologies? This special issue provides some preliminary answers to that question.

In her contribution, Nathalie Casemajor points out that 'the great variety of traditions, intellectual trajectories and emerging trends that could qualify as 'materialist' prevents picturing what is now labelled a 'material turn' in digital media studies as a homogeneous movement'. To help us make sense of this complex landscape, she provides an overview of six different theoretical frameworks for thinking about digital materiality: Friedrich Kittler's interest in the material structures of technology, analysed as both hardware and as logical structures; software and platform studies which focuses on the programmable nature of digital objects;

the field of electronic textuality with its foundations in the work on the material basis of literary production, focussing on N. Katherine Hayles; Matt Kirschenbaum's analysis of electronic texts using techniques from computer forensics; media ecology, which examines the links between nature and digital technologies; and Marxist approaches analysing materiality, politics and ecology using the concepts of ownership, labour and class. In addressing these frameworks as a whole, she finds that while they all share the assumption that digital media have a material substrate, they differ on how they interpret the implications of this fact, particularly with regard to politics.

Sy Taffel's paper picks up on the political aspects of digital materiality by exploring how the sourcing of materials required in the manufacture of the 'networked microelectronic architectures' of the internet has ethical implications. His case study focuses on the sourcing of tin, tantalum, titanium and gold from the Democratic Republic of Congo, and how the demand for these materials by equipment manufacturers became entangled in the country's recent military conflict. He also uses this case study to critically evaluate two ontological approaches to materiality, one that treats the world in terms of processes, following Deleuze and Guattari, and the other in terms of objects, as expressed in Object Orientated Ontology, championed by Graham Harman amongst others. He argues that these two approaches in fact diverge when considered in the light of his case study, and that a process-based approach provides a better account of the political and ethical aspects of materiality.

Staying with process-based approaches to materiality, Neal Thomas's contribution employs the work of Gilbert Simondon, a philosopher influential upon Deleuze, to think about social media. Drawing upon Simondon's concept of disparation, a process which integrates incompatible potentials in being, he invites us to think about social media in ontological rather than epistemological terms: he argues that social media is generally framed in epistemic terms, involving knowledge-seeking already-formed subjects communicating with each other on networks. However, he proposes an alternative conception, where the ontogenetic differences individuals carry within themselves are resolved through the engagement with social media leading to the subject becoming one way rather than another through their use of this technology.

Bolette Blaagaard's paper also explores the nature of subjectivity on the internet, this time in the context of journalism. She examines the emergence of online videos created by citizen journalists using mobile phones, and those produced by camera drones, and how these 'technological others' extend our knowledge of the world. She then breaks down the dualism between humans and technologies by drawing upon posthuman theorists such as N. Katherine Hayles and Rosi Braidotti, presenting human subjectivity not as a fixed viewpoint, but rather a 'multifaceted process of becoming' that is entangled with technologies like these. She argues that thinking about subjectivity in this way provides a framework to broaden the discussion of citizen media's impact on traditional journalism beyond notions of semiotics, language and formats, to include questions of the materiality, affect, authenticity and presence.

James Miller also invites us to think about the consequences of human-technology entanglement: he argues that developments in digital technology interfaces mean that humans form 'assemblages' of embodied and extended cognition with these technologies which 'allow people to experience greater emotional and imaginative relations with media'. His argument is based on the dematerialization of electronic media interfaces, where knobs, dials, mice and keyboards, as well as special physical placement of the media device (e.g. the television as a piece of furniture in the lounge room), are replaced by more intuitive, intelligent interfaces integrated into non-media objects and the materiality of the environment where media are used. While he states this dematerialization of the interface is still in progress, he

uses the history of media in the automobile, from the car radio to Apple's CarPlay and 'black box' recorders, to illustrate the possible trajectory of digital media, and the potential consequences of this.

Finally, Francesca Musiani provides us with a materialist perspective on internet governance. By employing a science and technology studies approach to examine the materiality of internet infrastructure, she argues that choices concerning the technical architecture of the internet have consequences for the 'purpose that the system serves, the dynamics that are enacted within it, [and] the techno-legal procedures it entails'. She argues therefore that internet governance does not just emanate from official institutions, but is also embedded within the architecture and infrastructure of the internet. She illustrates this by examining the question of user privacy, and how centralised internet architectures make this problematic, while decentralised ones can embed it within the workings of the infrastructure.

By covering a variety of subjects and theoretical frameworks, this special issue gives a flavour of materialist accounts of the internet, and of the alternative they offer to dualist approaches. In addition, while all the contributions share a concern with the material substrate of the internet, their different perspectives and theoretical frameworks also demonstrate the heterogeneity of these accounts. By bringing these different perspectives and frameworks together in one place, this special issue also aims to stimulate the reader to reflect upon their similarities and differences, and what this might tell us about the nature of materiality in a digital world.

Competing Interests
The author declares that they have no competing interests.

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Teaching Fellow in Media and Communications at the University of Sussex. His research interests include materialist approaches to digital media, and the use of interactive visual media to present academic research.

Note
[1] See Hondros (2015) for details of this research.

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