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Towards a Radical Digital Citizenship in Digital Education

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Abstract

In this article we attempt to define and explore a concept of 'radical digital citizenship' and its implications for digital education. We argue that the 'digital' and its attendant technologies are constituted by on-going materialist struggles for equality and justice in the Global South and North which are erased in the dominant literature and debates in digital education. We assert the need for politically informed understandings of the digital, technology and citizenship and for a 'radical digital citizenship' in which critical social relations with technology are made visible and emancipatory technological practices for social justice are developed.

Key words: digital activism; digital capitalism; digital citizenship; digital education; digital labour; digital literacy; digital materialism; social justice; social movements; Black Lives Matter

Introduction

The reason the digital debate feels so empty and toothless is simple: [it is] framed as a debate over "the digital" rather than "the political" and "the economic". (Morozov, 2013)

In this article we attempt to define and explore a concept of radical digital citizenship and its implications for both digital education and digital citizenship. By 'digital education' we mean the processes of teaching and learning about digital technology and the use of digital technology in educational spaces (Bayne and Ross, 2011; Goodfellow, 2011; Selwyn, 2011). In particular, we seek to examine how hegemonic constructions of digital citizenship within the field of digital education do little to critically understand citizens' social relations with technology and the 'digital' and, in fact, obscure and silence the particular politics embedded within digital citizenship. In order to counter problematic

constructions of digital citizenship, we argue there is need for a radical digital citizenship. By radical digital citizenship we mean praxis through which individuals and groups: (1) critically analyse the social, political, economic and environmental consequences of technologies in everyday life; (2) collectively deliberate and take action to build alternative and emancipatory technologies and technological practices.

Our interpretation of radical digital citizenship seeks to displace instrumental conceptions of digital literacy, which reduce digital citizenship to mere skills acquisition for navigating a digital world. Although there are good examples of critical scholarship engaging with this issue (e.g. Collin and Apple, 2010; Goodlaw and Lea, 2013; Knox and Bayne, 2013), a developed sense of the political—and how it shapes social and cultural relations—remains largely absent in the field of digital education. We argue that radical digital citizenship should problematise dominant ideas about technologies and rethink citizens' relations with technology to advance the common good. Radical digital citizenship should also debunk magical thinking whereby the 'digital' is invoked as a fetish, operating to obscure the material inequalities and socially exploitative relations upon which the proliferation of digital technology is premised.

These (political *and* educational) tasks of 'seeing the world relationally' and 'repositioning' ourselves accordingly, are fundamental to understanding the connections between global crises, education and social justice (Apple, 2010, p. 189). Moreover, they require a more critical and capacious understanding of

digital literacy than mainstream definitions allow (Collin and Apple, 2010). By 'critical' we mean recognition of the ways in which the dominant discursive and material practices of digital literacy are entangled in a wider web of exploitation. By 'capacious' we mean understanding the agential capacity of students, educators and activists who 'appropriate the tools of high-tech global capitalism for use in the construction of more just orders' (Collin and Apple, 2010, p. 46).

We begin this article with a discussion of the obscured politics of digital citizenship in the field of digital education. We then move on to explore the materiality of the digital and the consequences this has for the politics of digital citizenship. This leads us to a discussion of how the politics of recognition and redistribution are interwoven with processes of digital subjectification. We conclude with an examination of how a radical digital citizenship might support the development of a radical digital education.

The depoliticisation of digital citizenship and technology

In both formal and informal educational contexts, digital citizenship is primarily framed as the ability to effectively make sense of, navigate and exist in the digital world (Hargittai, 2002; 2007; Seale and Dutton, 2012). From learning how to access and use digital technologies, to developing 'netiquette' in online interactions, to understanding the ramifications of one's digital footprint, privacy and rights, digital citizenship appears to be synonymous with digital literacy (Knox and Bayne, 2013). By digital literacy we mean 'the capabilities which fit someone for living, learning and working in a digital society' (JISC 22/9/15). Digital citizenship is also increasingly articulated through rights-based

discourses, focusing on debates around access to relevant digital technologies and resilience in the face of a rapidly changing world whereby education, work and leisure are 'disrupted' by new technologies (Potter, 2006; Jounell, 2007; Barber, Donnelly and Rizvi, 2013; Oyedemi, 2014).

Furthermore, in much of the digital education literature, technology—digital or otherwise—is assumed to possess neutral properties that can simply be harnessed to achieve educators' aims. Consequently, digital technology is exempted from debates about inequality and injustice and not implicated in their reproductions (for example see: Boody, 2001; Gane, 2005; notable exceptions to this are Selwyn, 2008; Knox and Bayne, 2013; Sheail, 2014; the 2015 special issue of *Learning, Media and Technology* 40(3), focused on critical approaches to open digital education).

In this context, digital citizenship functions as a reaction to technologies operating as disciplining devices compelling individuals and groups to adopt particular skills and ways of being in order to successfully exist in this newly and constantly disrupted world of work and leisure. To be sure, constructing digital citizenship as a lived practice and a social learning process, rather than a conferred status, is important (Lister, 2003; Isin and Neilsen, 2008). However, thinking about digital citizenship *only* in the context of technological change renders digital citizenship as an unproblematic and instrumental process of becoming an 'effective' citizen able to cope in a fast changing and disrupted new world of work and leisure. Constructing technology as innocent or neutral

misunderstands the social relations of technology and its very real material consequences in our social world.

What is interesting in these dominant conceptions of digital citizenship is that they seem to have been constructed in isolation from collective struggles for social, political, economic and civil rights and their corresponding notions of citizenship (Marshall, 1950; Berlin, 1958; Young 1990; Lister 2003; Yuval-Davis, 2013). Thus, fetishised notions of digital citizenship have been stripped of their politics and political implications. By focusing on 'what's new', oftentimes the field of digital education has failed to ask 'who has power'. This is fundamentally problematic because, as Neil Selwyn (2012, p. 217) argues, 'many of the issues that surround education and technology are fundamentally political questions that are always asked of education and society – i.e. questions of what education is, and questions of what education should be.'

In arguing for a radical digital citizenship, we seek to explicitly inject politics into constructions of citizenship and technology in digital education. We seek to frame digital citizenship in wider discursive and material struggles for equality and social justice. In so doing, we wish to make the 'digital' a key site for articulating, organising and mobilising citizens for rights. We do not conceive of digital citizenship as separate from Marshallian, feminist and intersectional notions of citizenship but instead see it as a new context in which perennial debates about the redistribution of income and wealth, the recognition of difference and the representation and participation of different kinds of citizens are played out in the public sphere (Marshall, 1950; Young, 1990; Lister, 2003;

Fraser, 2010; Yuval-Davis, 2013). In this way, digital citizenship becomes another front in citizens' struggles for justice.

We will now turn to discuss the materialities, and hence, the politics, of the digital by exploring how 'new' technologies reproduce familiar struggles for justice. We will also explore the new opportunities this site of struggle offer citizens and the implications this has for our conceptions of radical digital citizenship and its technologies.

What's old and what's new in the materialities of digital citizenship?

In attempting to subvert the fetishisation of the 'new' in digital citizenship, we must first explore the 'old' materiality of the digital—the natural resources that make the digital possible, their relationship to global social relations of production and the political and environmental consequences of these relations. To paraphrase Paulo Freire (1970), this 'reading of the world', in the context of digital technology, should be a key component of a radical digital citizenship. As Parikka (2015) has demonstrated in his recent work, *A Geology of Media*, the digital 'demands its ecology.' We argue that making this ecology clear, in turn clarifies the ideological function of tropes such as the 'information age', 'network society', 'immaterial labour' and the 'participatory web 2.0' that are often used legitimise the supposed emancipatory potential of digital technologies (Ampuja & Koivisto, 2014; Fuchs, 2012). We will now turn to examine the 'old' oppressive relations that make 'new' digital technologies possible—the exploitation of natural resources and labour in the Global South.

Digital technology's everyday violence of resource extraction and labour exploitation

Columbo-tantalite, or coltan, is a 'black metallic grit' that is obtained by 'panning' from alluvial or riverine deposits typically in the Democratic Republic of Congo (DRC) (Whitman, 2012). From this exported grit, the element tantalum is extracted by companies in various countries. Tantalum is used in digital communication devices – such as laptops, tablets and particularly 3G and 4G phones – because its robustness across a range of temperatures and ability to store and release electric charge are properties that are required for the production of capacitors in the microchips of such devices (Whitman, 2012; Nest, 2011). Currently, there is no like-for-like industrial substitute for it, which is why it has euphemistically been called a 'strategic mineral' by the US Department of Defence. The less exotic, but equally necessary, element of tin is essential in the production of these same devices. It is not only used for casing but makes up a large proportion of the solder that holds together resistors, transistors and circuit boards. Nearly half of all mined tin is used for such purposes and Indonesia is currently the world's biggest exporter of tin (Friends of the Earth, 2012). The scramble to control and exploit these natural resources to manufacture digital technologies constitutes a very old and familiar materialist struggle played out for the benefit of supposedly new digital citizens.

Control over the lucrative coltan is a prime objective of armed groups in the DRC, who are estimated to earn \$8 million per year from its trade (Whitman 2012, p. 135). Increases in consumer demand for this resource, associated with the release of various consumer products such as laptops and games consoles, has therefore been indirectly linked to civil war, mass atrocities and associated sexual violence in the Eastern region of the DRC (MacIver, 2012; Whitman, 2012). Due to the complexity of supply chains, Whitman (2012) suggests that by the time coltan reaches refining companies in Europe and Asia, it is virtually impossible to distinguish 'clean' from 'dirty' tantalum. Despite these atrocities, its trade continues unabated due to growth markets in China, India and Russia, and 'because of the direction in which manufactured goods tend to flow, much of this coltan is likely still finding its way into goods destined for consumers in the global North' (MacIver, 2012, p. 167). Thus rather than something new, digital citizenship is constituted (although this is obscured in the hegemonic discourses about digital citizenship) by the familiar practices of environmental despoliation, civil war, slave labour and sexual violence for resource extraction and exploitation.

The labour relations of both resource extraction and product assembly further reveal the materiality of the digital. Indonesian tin mostly comes from Bangka Island. Its mining is an essential source of income for local people and a miner can make almost three times an agricultural day labourer's rate at the equivalent of £12 per day (Friends of the Earth, 2012, p. 19). Despite this, working conditions are documented as being extremely treacherous with injuries and fatal accidents common. Moreover, pollution of drinking water, loss of soil

fertility, decreasing fish stocks and loss of 60-70% of local coral from tin dredging are consequences of mining practices (ibid., p.13). Supply chain research conducted by Friends of the Earth (ibid.) has revealed that Samsung and Foxconn (the company that assembles Apple products) rely on tin from Bangka. A radical digital citizenship, we argue, must reckon with these brutal material struggles that form the foundation of supposedly 'new' digital relations. Radical digital citizens seeking to challenge inequality must act to make these seemingly invisible racist, patriarchal, enslaving and capitalist power relations visible.

From raw materials, we turn to their transformation into consumer products and technologies through the assembly process. We focus on Foxconn (or Hon Hai Precision) – Apple's contract manufacturers in China. The labour power required to produce Apple products is secured through a Chinese economic policy which: (1) has attracted capital through tax exemptions, with the effect of underfunding public services such as social welfare, healthcare and education (2) has stagnated wages for agricultural workers in order to ensure an almost limitless supply of urban labour for high-tech industry (Sandoval, 2013). Significantly, robotic assembly technologies are under-utilised in comparison to European and North American high-tech industries because Chinese wage labour is so cheap (Sandoval 2013, p. 327). The new Chinese urban workers—rural migrants, oftentimes young women—are routinely denied education, health and employment rights due to a legal framework that denies them urban citizenship status (Nakamura, 2011; Sandoval, 2013). In this context, gender, ethnic and

class relations in digital labour have very real impacts on citizenship status and rights.

Thus, through the lived but obscured experiences of rural and urban workers in the Global South we can see the material relations of production upon which the digital is premised. And yet, although marginal, there are instances of activist-academic alliances practicing forms of radical digital citizenship that re-define digital citizenship as a relational, politically engaged and oppositional process. Following multiple suicides by Foxconn employees in 2010, a group of students and scholars organised with labour activists, media campaigners, NGOs, current and ex-Foxconn employees to undertake a participatory action research project and to provide support and advice for factory workers (Qui, Gregg and Crawford, 2014). Consequently, ex-Foxconn employees, students and academics have been involved in collectively producing educational resources and materials shared online, such as the documentary 'Deconstructing Foxconn' in order to raise consciousness and mobilise around these issues (ibid, p. 574). Moreover, Foxconn employees, through their labour organising, are increasingly using their mobile phones in acts of citizen journalism, to document the poor conditions and the industrial relations of their workplaces (Chan and Pun, 2010; Qui et al. 2014).

Thus we see the potential for radical, creative and oppositional mobilisations which support the political agency of exploited workers and force us to consider more critical and capacious ideas of both digital education and digital citizenship.

Exploitative relations are not confined to the Global South, however. We will now turn to examine digital technology's material consequences in the Global North.

Digital technology's logic of displacement and dislocation

In the Global North and in the United State in particular, we also see the materialities of the digital at work. Emblematic of this process is the systematic displacement of long established middle and working class African American and Latinx communities from their neighbourhoods in the Bay Area in California and in Brooklyn in New York City, two hubs of technocapitalism. The billions of dollars made by tech entrepreneurs and venture capitalists have profound localised consequences that are disproportionately borne by racialised groups in these two areas. For instance, the rise in the median rental price in Oakland has seen a 25% drop in the Black population since 2000 (Cagle, 2014). Google, Facebook and Apple, which are engaged in widespread tax avoidance, use publically funded roads, bus stops and bus lanes to operate a private fleet of buses, so-called 'Google buses', for their employees who commute between their homes in Oakland and San Francisco and their corporate offices in Silicon Valley (Rodriguez, 21/9/15). With skyrocketing costs of living combined with the privatisation of key public services and a lack of rent controls, tech-based gentrification is rapidly transforming the race and class of once affordable and liveable inner-city neighbourhoods (Judd and Douglas, 2014).

We recognize that the politics of gentrification is a complex phenomenon not solely attributable to the digital technology industry. However, the municipal government in the Bay Area has leveraged the digital technology boom to attract

the industry and its employees to Oakland and San Francisco, which, we argue, is a de facto gentrification policy for poor and working class neighbourhoods. Indeed, San Francisco's Municipal Transportation Agency (MTA) Board of Directors has normalized and sought to regulate the use of so-called 'Google buses' making them a permanent feature of the city's transport system—with MTA only charging \$3.67 for each 'shuttle stop event' from the participating billion dollar tech companies (Rodriguez 17/11/15). This purposeful undercharging of these corporations appears to us to be a tax subsidy that supports the displacement of poor and working class Black and Latinx residents. Furthermore, Whittle et al (2015, p.160) demonstrate how tech-based gentrification exacerbates existing public health problems such as food insecurity and chronic illness by inflating housing costs which forces chronically ill individuals to choose between food and rent. The researchers argue that increasing housing insecurity can only be understood in the context of the 'structural violence' of neoliberal urban policy that has created the conditions for the influx of high-tech capital, whilst failing to put in place rent control policies to stabilise neighbourhoods and secure the tenancies of long established working class Black and Latinx communities.

Neither can the energy requirements and environmental implications of techno-capitalism in the Global North be disentangled from the structural violence of neoliberal urban development. For example, the reality behind the benign language of 'cloud computing' comprises 'massive structures housing thousands of servers for storing data, advanced mechanical cooling and ventilation equipment', which in some cases require more power than medium-sized towns

(Mahmoudi and Levenda, 2016, p. 108). Significantly, the resource intense (water, bricks and mortar, fossil fuels, telecommunication infrastructure etc.) materiality of such data centres has driven extensive corporate-state collusion in the form of firms successfully lobbying for corporate tax exemptions so that they can afford to do business at the expense of the most marginalised. This is why

we argue that a radical digital citizenship must be predicated on relational understandings of materialities: understandings which work relentlessly to expose the raced, gendered and classed bodies masked by the digital fetish.

Given these 'old' materialist politics of expropriation and exploitation embedded in the digital in both the Global South and North, what is, in fact, 'new' in terms of digital citizenship and technology? We will now turn to explore new ways of organising in social movements that digital technology affords.

New opportunities for social protest?

Certainly, what is new is that these materially mediated digital technologies offer a different way to communicate across time and space that circumvent mass media outlets. For our purposes here, we are particularly interested in the significance of this for citizenship practices. Social movement theorist Manuel Castells (2012) claims that we have witnessed a global epochal shift to a 'network society', implying that hegemonic power lies with those who control, program and connect dominant networks. For him, it follows that citizen counter-power is contingent on the ability of social movements to 'reprogram' networks around alternative interests and values and build connections between

'pro-democracy networks and economic justice networks, women's rights networks, environmental conservation networks, peace networks, freedom networks and so on' (Castells, 2012, p. 17).

Furthermore, Castells argues that a feature of the 'new' is contemporary social movements' existence in hybrid space-times between the urban 'space of place' (occupations, encampments, street protests and other forms of direct action) and the digital 'space of flows'. This allows discrete citizen mobilisations to network and learn from one another at a heretofore unachievable rate. Collin and Apple (2010, p. 48) make a similar case that:

The wiring together of the world and the spread of digital literacies means that increasing numbers of workers and activists are able to communicate rapidly and at little cost both within and across groups. Thus, feminists struggling against healthcare policies that exploit women's unpaid labour may work online to alert and enlist the help of environmentalists committed to creating healthier living conditions for all families.

On the face of it, this analysis seems to hold across a range of contemporary social movements, from Occupy to the Arab Spring to Black Lives Matter. Let us take Black Lives Matter as an example. Black Lives Matter¹ is the movement against the extra-judicial killings of Black people in America and has grown to have a

¹ Note that activists make a distinction between #BlackLivesMatter, the twitter hashtag, Black Lives Matter, the national activist network set up by Garza, Tometi and Cullors and the Movement for Black Lives, the broader social movement struggling for justice and equality for Black people. For our purposes here, we are discussing all three manifestations of this movement.

much wider focus on the equality and social justice for Black people. The Twitter hashtag #Blacklivesmatter was established in 2013 by three Black Queer women—Alicia Garza, Opal Tometi and Patrisse Cullors—to give space to the collective anger at the acquittal of George Zimmerman for the murder of Trayvon Martin (Garza 2014; Ruffin 2015). Social media was used for storytelling, mobilization and citizen journalism and the movement grew significantly in 2014 following the organization of a ‘freedom ride’ to Ferguson, Missouri to build solidarity with Black activists protesting the fatal shooting of Michael Brown by Darren Wilson. As DeRay McKesson (Kang 9/8/15), a prominent protestor in the Movement for Black Lives and a prolific #BlackLivesMatter Twitter user argues:

Social media was our weapon against erasure. It is how many of us first became aware of the protests and how we learned where to go, or what to do when teargassed, or who to trust...Many of us became friends digitally, first. And then we, the protestors, met in person. Social media allowed us to become our own storytellers. With it, we seized the power of our truth.

However, whilst the scale and complexity of the movement’s social relations (and thus learning capacity) would clearly not be possible without these new digital technologies, we should perhaps resist Castells’ (2012) romanticized idea of a leaderless movement through which participants relate on equal footing in frictionless, horizontal spaces. Indeed, as Alicia Garza (2014) argues in her herstory of the movement, Black Lives Matter was developed in response to the

systematic exclusions of different kinds of Black people in ostensibly emancipatory Black liberation spaces: 'Black Lives Matter affirms the lives of Black queer and trans folks, disabled folks, Black undocumented folks, folks with records, women and all Black lives along the gender spectrum. It centers those that have been marginalized within Black liberation movements'. Thus the 'old' power relations within the supposedly 'new' terrain of digital activism help to shape articulations and actions that challenge romanticized ideals of open, democratic and non-hierarchical relations within a 'network society'.

Note, we are not claiming that the 'newness' of digital citizenship is actually 'old' in the sense that it is the same 'kind of thing' as longstanding activist practices, merely amplified by technology. Nor would we deny that digital technologies have unintended and emergent effects on social action. Instead, through a consideration of the extent to which the 'old' materiality of the digital has been obfuscated, we argue that a radical digital citizenship should partly be about the capacity to deconstruct seductive grand narratives that erase or deprioritise the situated and complex politics of redistribution and recognition in particular struggles. We must pay close attention to the relationship between misrecognition and material inequality when we speak of the 'new' affordances of digital technologies in citizenship practices.

In short, radical digital citizenship must address the material and discursive aspects of digital subjectification. It is to such matters we now turn.

Digital Subjectification

Given the obfuscation of the materialities of the digital, we are interested in the consequences of digital education's hegemonic constructions of digital citizenship and technology. Digital education oftentimes reproduces neoliberal citizen subjectivities that are functionally aligned with the requirements of digital capitalism. There is a sense in which the 'cyber culture' ideal of the digital citizen epitomises what Boltanski and Chiapello (2006) identify as the 'New Spirit of Capitalism.' Du Gay and Morgan (2013, p. 24) explain further:

This 'ideal typical' figure is a *nomadic* 'network-extender', mobile, tolerant of difference and ambivalence, realistic about people's desires (and weaknesses), informal and friendly, with a less rigid relationship to property. Those lacking the requisite flexibility, who cannot become the nodal point of various networks, thus generating the necessary activity, or otherwise engage, communicate, market, innovate, add value, and so on and so forth, have little hope of success.

In other words, digital citizens exist outside of time and place. This extreme cosmopolitanism requires no anchoring and loyalty to a particular job, neighbourhood or even nation state. Those who must be tied to a time and place, because of poverty or caring responsibilities, will be left behind in this brave new world. However, the infinite flexibility of the nomadic digital citizen comes at a very high price. The nomadic digital citizen is also a precarious one with few expectations of job security or state-based social welfare (Standing 2013). This freedom through precarity presents both affective and cognitive challenges. Cockayne (forthcoming 2016, p. 15), who explores the affective dimensions of

creative digital labour, argues that techno-utopian narratives of ‘horizontality, empowerment and democratisation’ are coupled to ‘the forms of work they valorise, which necessarily include normative entrepreneurial and affective attachments to precarious working conditions.’

Moreover, digital education has tended to advance an exclusionary ideal of digital citizenship. Turner (2008), in his historical account of the rise of ‘digital utopianism’, shows how the protagonists at the convergence of counter culture and tech entrepreneurship in Silicon Valley universalised their own standpoints to construct an ideal type of the new digital citizen: a white, educated, middle class man living in the Global North. This nomadic digital citizen, as we argued above, has the ability to be infinitely flexible and untied to a particular time and place is a privileged position dependent on one’s race, class, gender and legal status. Importantly, these digital citizens practice a kind of utopian politics that seeks to accelerate the gains of digital technology beyond the ‘value system, governance structures and mass pathologies’ of ‘late capitalism’ in a process of globalisation ‘from below’ (Williams and Srnicek, 2013, no pagination). By attempting to ‘democratise knowledge’ about coding, financial algorithms and Big Data for the benefit of those groups who are failing to be flexible in a disrupted world, these nomadic digital citizens seek to intervene and repurpose technocapitalism for progressive ends. We can see examples of these practices in the myriad of projects that seek to include ‘under-represented’ groups in techocapitalism through training and development programmes (for example see: Hack the Hood <http://www.hackthehood.org>, Women Who Code <https://www.womenwhocode.com> and We Code America <http://www.wecodeamerica.com>).

Whilst these kinds of ‘civic tech’ initiatives are important in the democratisation of digital technology knowledge, they seek to include the so-called ‘digital have nots’ in the prevailing logic of exclusion and capitalist consumption. The human geography of Silicon Valley itself reflects this. For example, Davidson’s (2015, p. 399-400) ethnographic study of the ‘spatialised politics’ of aspiration in two different high schools in Silicon Valley (one predominantly white and one predominantly Latinx) found that:

Despite the efforts of many well-meaning educators and workers in Silicon Valley working within programmes...designed to ‘bridge the digital divide’, gendered, hetero-patriarchal, and racialized school space, urban space, and (anti-immigrant) national space worked to promote the social exclusion of Latina students by constructing them as not academically inclined, too interested in boys and sex, likely to get pregnant (hyper-reproductive), and unemployable as a highly-skilled worker.

Democratising digital technology knowledge is crucial but the bases on which different social groups are included in this digital utopia are elided. Too often utopian practices ‘[intensify] a largely online and networked politics’ that relies heavily on individualised notions of self-improvement, self-organisation and advancement—through the acquisition of digital knowledge, skills and capabilities—which ‘pretends not only that there are no gendered, class or raced hierarchies between the actors, but also suggests a subject capable of organising’ (Hoofd, 2010, p. 15). Under technocapitalism, nomadic digital citizens are compelled ‘to situate themselves [in the social world] by pretending everyone is

on the same level of privilege’ and that there are no institutionalised inequalities that might undermine the agency of citizens (ibid., p. 17).

Given the limitations of these prevailing constructions of digital citizenship in digital education, we will now turn to examine what an alternative model to dominant approaches to digital citizenship might look like. We seek to define radical digital citizenship and attempt to discuss in greater detail the constitutive elements of this form of citizenship and the implications this has for technology and radical citizenship practices.

Towards a radical digital citizenship

We define ‘radical digital citizenship’ as a process by which individuals and groups committed to social justice critically analyse the social, political and economic consequences of digital technologies in everyday life and collectively deliberate and take action to build alternative and emancipatory technologies and technological practices. Unlike hegemonic models of digital citizenship in digital education, radical digital citizenship is not concerned with the instrumental process of acquiring digital literacy and capabilities in order to effectively function in an apparently ‘disrupted’ world. Instead, the cornerstone of a radical digital citizenship is the insistence that citizenship is a *process of becoming*—that it is an active and reflective state for individual and collective thinking and practice for collective action for the common good (hooks, 2003; Lister, 2003; Yuval-Davis, 2013). Radical digital citizenship is a fundamentally political practice of understanding the implications of the development and application of technology in our lives. We believe that scholars, activists,

practitioners and artists can and should adopt the practices of radical digital citizenship. We will now turn to discuss what we see as the two constitutive elements of a radical digital citizenship: 1) critically analysing technology and 2) collective action for developing emancipatory technologies.

To make meaningful the idea of a radical digital citizenship means citizens must attempt to understand the social construction of technology and evaluate the political features of technology (Heidegger, 1977; Mumford, 1964; Winner, 1980; Pinch and Bijker, 1987; Klein and Kleinman, 2002; Chun and Coleman 2009; Noble 2013; Noble and Tynes forthcoming 2016; Nakamura 2015). In so doing, citizens will be able to trace the particular political, economic and social arrangements that give rise to certain kinds of technology and examine the influence of technology on social relations. For example, Winner (1980) persuasively demonstrates how Robert Moses, the powerful urban planner in New York City during the 1960s and 1970s, turned the city's infrastructure into a technology designed to frustrate desegregation efforts and undermine the social citizenship claims of African Americans and Latinxs. In particular, Winner (1980, pp. 3-4) shows how Moses constructed freeways and bridges in such a way as to block public transport from reaching all-white suburbs. Since minority groups at the time were most likely to use public transport for work and leisure, Moses effectively prevented these groups from settling in white neighbourhoods by privileging the car as the *only* means of transport from the city to the suburbs. By refusing to define technology as a neutral concept, we can see how it—in this case, the transportation infrastructure in New York city and its suburbs—can

embody particular ideologies to undermine the citizenship claims of marginalised groups.

In groundbreaking work, Safiya Umoja Noble (2013; forthcoming 2016) demonstrates how racism and sexism are encoded in the seemingly apolitical space of Google's algorithm. Noble argues that women of colour experience a loss of agency through the racist and sexist misrecognitions and misrepresentations that are generated through various search engines. The dominance of white male engineers at Google who are not attuned to these politics in the coding process and the naturalisation of racism and sexism in our culture combine to re-enforce racist and sexist oppression on the web.

Politicising technology makes it easier to understand how:

there is no such thing as a pure and politically innocent "basic" science that can be transformed into technological applications to be "applied" in "good" or "bad" ways at a comfortable distance from the "clean" hands of the researcher engaged in the former. (Asberg and Lykke, 2010, p. 299)

To practice a radical digital citizenship is to resist the idea that a neutral technology exists. Technology always reflects the interests of scientists, engineers and capitalists (and in Silicon Valley, as elsewhere, there is little difference between engineers and capitalists) thus 'the practices and social relations of technoscience go hand in hand with global and local capitalism' (Asberg and Lykke, 2010, p. 300). By critically analysing the social construction of technology, we can map the effects of particular kinds of technology beyond

its 'intended' applications. Returning to the example of Oakland, by politicizing digital technology, we are able to understand that the displacement of African American and Latinx residents from their neighbourhoods through rapid gentrification is not an 'unintentional', 'unforeseen' and ultimately 'unfortunate' byproduct of the tech boom in nearby Silicon Valley. Rather, to understand the digital technologies designed and engineered (but not manufactured) in Silicon Valley necessitates that we understand their local and global effects. Just as Robert Moses used urban transport infrastructure to further his racist politics, so the tech entrepreneurs and companies are using digital technologies to transform Oakland in their own image. This city is being reconstructed to better facilitate capitalist reproduction and better service (at the direct expense of working class minority residents) the rich, white and mostly male nomadic digital citizens untied and disloyal to a particular time and place. Thus, to understand what digital technology *is*, we must understand what it *does*, materially and asymmetrically, to different social groups.

Politicising technology is directly linked to what we identify as the second constitutive element of a radical digital citizenship and that is collective action for emancipatory technology and technological practice. By 'collective action for emancipatory technology and technological practice' we mean the process by which individuals and groups work together to build and maintain alternative communication infrastructure to enable marginalised groups to 'convey their own messages, bypassing the filters of commercial and state gatekeepers' (Milan 2013, p. 1). A tentative example of this kind of work might be observed in the Femtech network (<http://femtechnet.org>). If we recognise that dominant digital

and communication technologies embody and practice an exclusionary capitalist ethos, then it is important to develop independent information platforms, alternative presses, grassroots internet service providers (ISPs), and open source software that support dialogue, organisation and mobilisation outside the confines of corporate media infrastructure (Earl and Kimport, 2011). However, it is important to resist techno-utopian thinking about emancipatory technology and technological spaces. Whilst important examples of emancipatory technology include Linux and Ubuntu, the free open source software and operating systems, open source movements are themselves oftentimes exclusionary spaces in which radical activists—in the name of liberation—reproduce racism, sexism and homophobia (Nakamura, Kolko and Rodman, 2000; Tanczer, 2015). Thus, emancipatory technological practices must look beyond simplistic analyses of class and capitalism and take seriously intersections of race, class, gender, sexuality and disability (Juhasz and Balasmo, 2012; Cooper and Rhee, 2015).

An important example of creating alternative technological spaces for emancipatory learning and practice is the 2015 Women's Freedom Conference, a digital conference organised by women of colour to 'center and amplify the unique voices and experiences of underrepresented women who have been disenfranchised beyond gender alone' (<http://womensfreedomconference.com/live/>). A collective leadership of Black women, including Feminista Jones, Sarah Huny Young and Melanie Dione, coded and built their site, organised and hosted the live-stream of 41 speakers and

coordinated participant debate across a range of social media platforms in order to include the largest possible number of women of colour across the globe.

However, we also identify emancipatory technological practices using corporate digital social media platforms. Returning to our earlier example of Black Lives Matter, activists have been able to transform aspects of Twitter into emancipatory learning and protest spaces. The act of using a hashtag to denote the murder of a Black person by the police has become a routinised political and pedagogical practice in which a hashtag becomes a space for citizen journalists to share information about the incident, and to organize and mobilise in both digital and neighbourhood spaces for justice. Indeed the hashtag has become a key site for political education for Black Lives Matter activists that has sparked a number of other related campaigns such as #SayHerName, which seeks to counter the prevailing notion that Black death at the hands of the police is solely a problem for Black men and highlight state sanctioned brutalisations and deaths of Black women and Black trans women. Again, what is important to emphasise is that Twitter does not determine activism—but, it is not neutral either, it supports new forms of learning about injustices which in turn enhance grassroots organising efforts by activists for social justice.

If politics is about struggles for power, then part of the struggle is to name digital technologies as a power relation and create alternative technology and practices to create new spaces for citizens to encounter each other to struggle for equality and justice. This, of course, does not mean that emancipatory uses of technology are free from the materialist inequalities and injustices we outlined earlier in

this article. What is missing in the radical digital citizenship examples of we cite is an explicit acknowledgement of and activism against technology's exploitative production and critical reflections on the implications the production of technology has on how activists construct their emancipatory praxes.

So, what does radical digital citizenship mean for digital education? For us, digital education must move away from its apolitical and/or politically naïve posture. If the field of digital education wants to be more than just a convenient tool for the neoliberal reshaping of education and citizenship, it must take seriously the radical potential of education in digital spaces and digital technologies. What that means is that digital education, as an academic field of practice, is not *just* about investigating the educational experiences of being online. Understanding this new space for human activity and education is important but it is also important to identify the ways in which it has been created and shaped for particular purposes. To pretend that those purposes do not matter—or worse, pretend that those purposes are part of a different conversation that is outside the purview of digital education is a mistake. The critical heavy lifting about digital technologies should not be left to cultural theory and science and technology studies scholars and digital privacy and rights activists. We think the apolitical stance of digital education amounts to an abdication of responsibility about what education in digital spaces might *mean* and what education in these spaces might *be*.

As Lyn Tett (2010) argues, education is at least partly about desire fulfillment. Taking part in education is an opportunity to consider the world as it is and how

it could be. Education can 'open up a way to aspiration, to desire better, to desire more and to above all to desire in a different way' (Thompson 1976, quoted in Tett, 2010, p. 97). Digital education can play an important role in helping individuals and groups desire more for themselves than being a commodity and performing a digital self online. We think digital education can help us to desire more from the internet than just the commodification of digital spaces. We also think that digital education can help us understand systemic social, economic and environmental inequalities in a new and different way. However, to make this leap to help us desire better requires the development of a radical digital citizenship.

Conclusions

In this article we attempted to examine how certain facets of digital education, as a scholarly field, construct digital citizenship in ways that obscure the politics of the digital and reproduce exclusionary and capitalist forms of citizenship. We argued that digital citizenship is depoliticised through a hegemonic assumption that the digital is fundamentally new and immaterial. We went on to demonstrate how, in fact, the digital and digital technologies are constituted by on-going materialist struggles for equality and justice. As a way to re-politicise digital citizenship, we argued for an alternative radical digital citizenship in which critical social relations with technology are made visible and that emancipatory technological practices for social justice are developed.

We are sceptical about the possibilities of developing a radical digital citizenship in digital education. The key priorities in digital education at present such as

developing online undergraduate, postgraduate programmes and massive online open courses (MOOCs), learning analytics and analysing digital identities in online spaces, constrain critical questions about the politics of digital education. This is especially case in relation to the very real material struggles—between faculty, students, universities and private sector organisations—over the shape, delivery, cost and accessibility of higher education. The above academic questions about digital education are important but they must always and relentlessly be put in a wider context of the struggles of power as embodied in digital technologies.

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